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**Special Issue on
Wildlife**

Photo: Chelupur Shyam Sunder, with Thanks

Pair of Red Vented Bulbul (*Pycnonotus cafer*)



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- The TSFDC has also taken up the challenging task of Eco-Tourism development in the State. Already made open to public – Hyderabad Botanical Garden, Pala Pitta Cycling Park near Hi-Tech City, Madhapur, which has received the ISO 9001:2015 certification on 16-10-2019. Effective SMC measures for recharging pond water and improving surface water taken up in association with Smaran NGO. Mahavir Nischal Van Eco-Tourism Centre, Vanasthalipuram, and Mrugavani National Park at Chilkur are attracting increasing number of visitors.
- TSFDC is also developing Urban Parks in Lalgudi Malakpet RF Cluster, Thumukunta RF & Gowdelli PC Kalan & PC Khurd Cluster. Sankalp Taru NGO is collaborating with TSFDC in improving greenery at Gowdelli Park.
- TSFDC has also taken up consultancy work for NTPC and RFCL and successfully raised multiple Row avenue plantation along Rajiv Rahadari highway in peddapally Dist.
- Dhanvanthari herbal garden is revived with support from Deloitte and Technical support of environment forest solutions.

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EDITORIAL

International Day of Older Persons: - International Day of Older Persons is observed on 1st October every year throughout the globe. On 14 December 1990, the United Nations General Assembly designated the International Day of Older Persons. The first International Day of Older Persons was observed on 1st October 1991. Conventionally, “elderly” has been defined as a chronological age of 65 years old or older, while those from 65 through 74 years old are referred to as “early elderly” and those over 75 years old as “late elderly. In India there is no concept of older persons but we call a person as senior citizen when he attains the age of 60 years and a person super senior citizen when he attains the age of 80 years. Elderly people carry immense experience of their personal and professional life, society at large need to channelize those experience for better tomorrow.

The International Day of Older Persons is an opportunity to highlight the important contributions that older people make to society, raise awareness of the opportunities, challenges of ageing in today's world, to raise awareness of the condition of older people and to support them. This day is also observed to raise awareness about issues affecting the elderly, such as senescence and elder abuse. Every year a theme is selected for International Day of Older persons. The theme for 2018 was “Celebrating Older Human Rights Champions” and for 2019 the theme was “The Journey to Age Equality”. The theme for 2020 is “Pandemics: Do They Change How We Address Age and Ageing”. The year 2020 marks the 30th Anniversary of the International Day of Older Persons. This year has also seen an emergence of COVID-19, that has caused an upheaval across the world. Considering the higher risks confronted by older persons during the outbreak of pandemics

such as COVID-19, policy and programmatic interventions must be targeted towards raising awareness of their special needs.

There were 703 million persons aged 65 years or over in the world in 2019. The number of older persons is projected to almost double to 1.5 billion in 2050. Globally, the share of the population aged 65 years or over increased from 6 per cent in 1990 to 9 per cent in 2019 and in 2050 it is projected to be around 20 %. In India also, the population of older persons has increased from nearly 2 crores in 1951 to 7.2 crores in 2001. In other words, about 8% of the total population is above 60 years. The figure will cross 20% mark by 2050. India also recorded an improvement in life expectancy, which was 47 years in 1969, growing to 60 years in 1994 and 69 years in 2019. India is going through a demographic transition with a fall in fertility rate, fall in infant's death and increase in life expectancy. A positive side of this is rise in working class thereby decrease in dependency ratio. Soon, we will face another challenge with a rapid increase in the number of aged and the associated health and social issues, as large population will move from working ages to old ages, thereby increasing the old age dependency.

Ageing is a process which occurs naturally in the living organisms. It is the decline in the capacity of the functioning of the organs of body. The population of the aged has been increasing over the years. Their rights are being encroached upon each day and protection of them comes naturally to balance the human rights scale. They are the most vulnerable class of our society throughout the globe. Old age is that stage in one's life that requires both mental and social support from others, both of which are interconnected. If in a society where there are poor facilities for sanitation, infrastructure, and

health care, it is the elderly people who suffer the most. The elderly people mainly suffer from the chronic diseases like cardio vascular illness, cancer, arthritis, hyper tension, diabetes, kidney problems, loss of vision, memory loss etc. More than half of the older people (53.6 per cent) are searching for job. 46.4 per cent of people don't want to do any work. The major reasons for job searching are financial stress. Older generation has become an easy target for criminal elements. They are often victims of fraudulent dealings, physical and emotional abuse.

In our Country except the following two provisions under law no separate law for senior citizens was there till 2007, section 20 of Hindu marriage and adoption act, 1956 which makes it obligatory provisions to maintain an aged parent and under Section 125 of Criminal Procedure Code, under which the older parents can claim maintenance from their children. It was only with the passing of the Maintenance and Welfare of Parents and Senior Citizens Act, 2007 that a specific legislation for the protection of senior citizens came into force in India. Elderly rights are one of the fundamental rights of India. The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 seeks to make it a legal obligation for children and heirs to provide sufficient maintenance to senior citizens, and proposes to make provisions for state governments to establish old age homes in every district. The Act places an obligation on children and relatives to maintain a senior citizen or a parent to the extent that they can live a normal life. The definition of senior citizen in this Act includes both Indian citizens aged over 60 years, and all parents irrespective of age. This obligation applies to all Indian citizens, including those residing abroad. The section 2, of Maintenance and Welfare of Parents and

Senior Citizens Act, 2007, defines "children" as sons, daughters, grandsons and granddaughters and "parents" includes biological, adoptive or step parents. A senior citizen who is unable to maintain himself based on his own earnings or property shall, have the right to apply to a maintenance tribunal for a monthly allowance from their child or relative not exceeding Rs 10000/- per month to live honourably. Tribunal has also got the powers to declare the transfer of parent's property to be void under certain circumstances. This is as per section 24 of the Act. As per section 25 of this Act, every offence under this Act is cognizable, bailable and tried summarily by the Magistrate. The intention and purpose of this Act is to provide better life for the parents and senior citizens of our country. The District Collectors are bound to protect the life and property of senior citizens within their jurisdiction and ensure that they are able to live with security and dignity in accordance with the provisions of the Maintenance and Welfare of Parents and Senior Citizens Act, 2007 and rules framed there under. If he is incapable of filing the application on his own, he may authorise any other person or registered voluntary association to apply on his behalf. The maintenance tribunal may also, on its own, initiate the process for maintenance. Provisions have been made in the Constitution of India to preserve the rights of those aged above 60. Article 41 of the Constitution secures the right of senior citizens to employment, education and public assistance. It also ensures that the state must uphold these rights in cases of disability, old age or sickness. A separate Department of Senior Citizens under the aegis of the Ministry of Social Justice was formed and appointed as the nodal agency for all matter relating to the implementation of the National Policy of Senior Citizen 2011.

In developed countries like US, Australia, UK and many other countries older or senior citizens get concessions in all walks of life. In India also State and Central Governments have granted many concessions to older people, (senior citizens) like rebate in income tax, health, travel, housing, higher rate of interest for deposits in Banks and Post Offices, separate queues of older

people wherever queues are to be formed and grant of monthly pensions.

Vana Premi wishes that the Central and State Governments extend more facilities to older people, (senior citizens) specially the rural and illiterate older people and make their lives comfortable. QMK,
(Source of statistics: Internet)

Letters to Editor

The Editor,
Dear Sir,

Refer to the News and Notes of the VP of Sept, 2020; Climate change may bring back the viruses hidden dormant...under the ice caps & permafrost is shivering about the cruxes of the global warming, temperature rise, droughts, melting of the ice caps exposing the dormant pathogens hidden under the permafrost from millions of years to a century back and their probable entry into the lives of host animals and on to human....diseases they may cause with the background of the past pandemics trumpets the seriousness of threats for humanity as warned by the eminent Scientists. The civilization has to wake up to address the GW in war footing.

B.M.T Rajeev,
Bengalore

"But even if those wavelengths only vibrate for hundreds of square miles, which is now generally accepted in the scientific community, it still means elephants are potentially in contact with each other across the African continent. One herd speaks with a neighbouring herd, which in turn connects with another until you have conduits covering their entire habitat, just as you or I would have a long-distance telephone call."

- Lawrence Anthony

WILDLIFE WEEK CELEBRATION HAS LITTLE IMPACT ON GROUND

**By
B.K. Singh**

A week and half in the beginning of October is devoted on Wildlife Week celebrations at State level, division level and sometimes even up to range level in Forest department. The most common activities during the celebrations are drawing and essay writing competitions among the school children, wildlife exhibitions for public viewing at forest offices, talks from experts for education and awareness to youth and public from cities and small towns and wild life walks with banners showing appeal for conservation generally organized by department and NGOs. Overall, the program sounds wonderful as school children and general public are made conversant with issues relating to conservation of forests and wildlife, but it will have very little impact in resolving the issues at the ground level.

Let me now focus on the field situation and find answer to the question whether the benefit of celebration reaches the communities residing in and around forests and wildlife areas. Did we ever target the villagers in our celebrations that are facing the brunt of conflict with wildlife? Can we tell them not to harm wildlife and love them; just as the ex gratia payments for the damages to life and properties are made belatedly and inadequately?

Forests are the habitats of wildlife and have been subjected to anthropogenic pressures, like illicit cutting of trees, grazing, forest fire, encroachments, and removal of non-timber forest products etc. Also, there are communities

dependent on forests for their livelihood. Forest lands are also diverted for mining, other development and infrastructure projects. All the important minerals are available in areas having rich forests. The forests, over the period of time have been degraded and fragmented and thus severely impacting the habitats for wildlife and also the corridors for their movement.

Fragmented forests have less ability to provide regulating eco system services like carbon storage and hydrological services and may be more vulnerable to extreme weather, edge effect and invasive species. Linear barriers like rails can disrupt movement of wild animals, soil erosion and can impact run off and water quality. The changes in hydrology of basin would have impact on aquatic biodiversity. Such disturbance in Western Ghats, India's important carbon and hydro-climatic regulating landscape could lead to cascading and irreversible effects.

Forests are the mothers of rivers. The deforestation can deplete the flow of water in the streams especially during dry seasons. A catchment that has natural forests/ grasslands/ healthy organic matter enriched soils intact is likely to regulate the hydrology – the so called “sponge” effect by allowing infiltration and deep recharge to ground water. This sustains base flow as well as dry season flow (although this depends upon geology, soil type or if forest is older or secondary succession) as that can influence evapo-transpiration and thereby reduced water for dry season.

A well vegetated catchment (grasses, shrubs and trees) will definitely improve the water quality of the river and reduce high level of soil erosion and sedimentation. Natural atmospheric recycling evapo-transpiration from forested landscape can influence rainfall in drier parts of peninsula and land masses. This is emerging area of research.

Forests also bring rains at places far off from the coasts. Two Physicists named A M Makarieva and V G Gorshkov from St. Petersburg Nuclear Physics Institute, Russia have studied and brought out a paper titled "Biotic pump of atmospheric moisture as driver of the hydrological cycle on land", which was finally published in "Hydrology and Earth System Sciences" on 27th march 2007. It has been observed that water from the land flows in oceans under gravity and the loss of water from land is continuously compensated by atmospheric transport of moisture from ocean to land. Using data from terrestrial transects, the Physicists have found that air fluxes can transport moisture over non forested areas for few hundred kilometres; precipitation decreases exponentially with distance from ocean. In contrast precipitation over extensive natural forests is independent of distance from ocean for several thousand kilometres. This explains the existence of an active biotic pump transporting atmospheric moisture inland from the ocean. A Physics principle is formulated to explain the phenomenon of biotic pump and according to which the low-level air moves from areas with weak evaporation to areas with intense evaporation. Due to high leaf area index, tropical evergreen forests maintain high evaporation fluxes, which support the ascending air motion over the forest and "suck in" moist air from the ocean, which is essence of biotic pump of atmospheric moisture, resulting in enhanced precipitation at any distance from the ocean.

Land with low leaf index vegetation can lead up to tenfold reduction in precipitation and run off. The evidences testify that an intense terrestrial water cycle is unachievable without extensive forests covering the width of the continent.

Theoretical claim of Physicists is supported by worldwide observations that the condensation of water vapor at cloud forming altitude bring about a sharp reduction in local atmospheric pressure, resulting in implosion of sufficient strength so as to suck air from the surface. Trade winds from Africa to equatorial South America pick up moisture from Atlantic Ocean, which is carried by the wind and is sucked in over Amazon's forests. This way hydrological cycle drives mass circulation of air, and can be understood to be driven by processes of convection that takes place over 550-million-hectare Amazon basin. The 'fuel' for the convection being contingent on the high rate of water vapor pumping from closed canopy vegetation.

Thus, forested landscapes are required to be conserved not only for food, shelter and movement for wildlife, but also for the survival of the humanity. Forests are the life support system, yet bureaucrats and politicians for their vested interests have acted in a manner detrimental to conservation. The deforestation is accelerated during past decade and half on account of enactment of "The Scheduled Tribes and Other Traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 and Rules 2008.

This particular enactment accelerated deforestation on forest lands in tribal dominated States of Central and peninsular India. It triggered large scale encroachments everywhere. Earlier Government of India had put its foot down on the request of the States to regularize post 1978 encroachments. Any regularization needed

the concurrence of Government of India under Forest (Conservation) Act, 1980. A decade later even Supreme Court of India in its famous Godavarman judgment ordered for eviction of all unauthorized occupation of forest land. Just when these directions were being complied and encroachers were facing the eviction, Forest Rights Act was brought in by United Progressive Alliance Government in centre and Scheduled Tribes (STs) and other traditional forest dwellers (OTFDs) saw light at the end of the tunnel. OTFDs were required to prove three generations (75 years) of occupation as on 13-12-2005 whereas STs simply needed to show occupation of forest lands as on the cut-off date of 13-12-2005. Never the less both the groups freaked out to clear tree growth and occupy more forest lands for claiming rights. They were supported by leaders irrespective of the political affiliations. Since most States had regularized the encroachments on forest lands till 1978, theoretically the doors should have been shut for OTFDs. Politicians supporting them for electoral gains and wanting to encash it in all successive elections, last date for filing the claims were not fixed. Even today there are press reports from different part of the country that tribal families are clearing tree growth on forest lands for occupation and claiming rights under the Act for cultivation. I have seen frequent reports of this type in Dainik Bhaskar from Burhanpur district of Madhya Pradesh. There are many more press reports from Andhra Pradesh, Telangana, Maharashtra, Chhattisgarh as well saying that the forests are cleared after the Act has come into existence for claiming rights. Each of the States mentioned here and Odisha have lost lakhs of hectares of forest lands and bogus claims have been filed. Till July 2019 rights have been granted over more than 72 lakh hectare forest lands.

Claims are processed in Gram Panchayaths, SDLCs and DLCs and many places even concerned forest officials have given favourable verification report under pressure from politicians and revenue department officers. Quite a number of bogus claims are accepted everywhere and still substantial numbers are rejected. Ministry of Tribal Affairs, Government of India is taking up the matters with the States and forcing them to reconsider all rejected cases of claims.

Even the rejected applicants are not being dispossessed from the occupation of forest land. They have hope that politicians would support and the rights would be granted one day. This encourages more and more fresh claimants to file applications after clearing the tree growth and occupying the forest lands. Pro FRA activists filed cases in respective High Courts, which are also shifted to Supreme Court in 2016. Supreme Court of India asked Forest Survey of India to verify the rejected claims in States and report the facts.

Forest Survey of India analysed the Satellite imagery and filed an affidavit in the Court. The essence of it is in the below mentioned Para.

Satellite imagery analysis by Forest Survey of India has shown large scale deforestation due to encroachment and clearing since December 13, 2005, the cut-off date specified in FRA for individual claims. Subhash Ashutosh Director FSI in his affidavit before Supreme Court has said that 71.06% of individual claim is illegal and 14 lakhs such claims were rejected by Gram Sabha themselves. The affidavit also said that 33 states responded to its request for data on individual forest rights claims, however only 12 states provided data on rejected polygons pertaining to 77,486 cases. These are Andhra Pradesh, Assam, Bihar, Himachal Pradesh,

Jharkhand, Karnataka, Maharashtra, Rajasthan, Odisha, Uttar Pradesh, Uttarakhand and West Bengal. The affidavit further said that a satellite survey of encroachment position was conducted in 14,259 cases and it was found that 71.06% of polygons were encroachments. In Adugundi area of Nagarhole forests, satellite imagery shows new habitation and cultivated patches sprang up far beyond the earlier habitation and farmland.

MoEF & CC has issued several guidelines for identifying Critical Wildlife Habitats (CWH) and also to notify it. Purpose is to relocate right holders out of proposed CWH, duly providing them the compensation based on the rights vested. The guidelines provide for the constitution of expert committee, who will have public consultation on the proposal.

FRA rules are strangely silent about the identification and notifying CWH. Only section 2 (b) of the Act (FRA, 2006) gives definition of CWH and specifies that the identification must be based on scientific and objective criteria and envisages consultation by an expert committee. The overriding objective here is to ensure that the habitats are secure and its fragmentations are minimized. The conservation of endangered and threatened species in a PA is the priority. Unless habitats are secure the conflicts relating to human and wildlife interaction would rise and conservation would suffer.

Forest Rights Act and Rules do not specify to hold public consultation; these guidelines inter alia dilute Wildlife (Protection) Act 1972. And rightly even after fifteen years of enactment not an inch of land in this country has been identified

and notified as CWH.

We are not in a position to notify inviolate areas. The forests are being encroached with the blessing of political masters, resulting in fragmentation and degradation of wildlife habitats and corridors. When we cannot ensure proper food and shelter for wildlife, the conflicts are bound to occur.

Forest managements are often to do firefighting when tigers and herd of elephants stray out and inflict damage to livestock, properties, crops and even human. The packages for compensation, though differs from State to State, is generally inadequate and also not paid on time. The public unrest against Forest Department at times takes serious turns. Department officials face violent mobs, and Police also steps in if there are deaths or casualties on either side. Department officials are taken to task, face arrest and harassment even if there is minor casualty to any one among the agitating mob.

Wildlife week celebrations should therefore focus on how to halt further degradation and fragmentation of habitats, how to restore corridors, how the conflicts to be addressed, what can be appropriate compensation and how can it be paid without harassing the victim. Villages facing the conflict should be identified. Education and awareness programs should not only be conducted in cities and small towns, but should also be taken to the identified villages.

(Sri B. K. Singh is Retired Principal Chief Conservator of Forests (Head of Forest Force) Karnataka and can be reached on e mail I. D. bksinghretired pccf@gmail.com)

"Humankind must learn to understand that the life of an animal is in no way less precious than our own." - Paul Oxtan

TIGERS ARE LOCKED DOWN TO COLLAPSE IN THEIR OWN LAND

**By
UMA SHANKER SINGH, DSc**

This is also an incredible 210% rise from 1,411 recorded in 2006, according to the all-India estimation 'Status of Tigers, Co-predators, Prey and their Habitat, 2018', released by Prime Minister in 2019. In comparison to the census done in the year the tiger population has jumped to an estimated 2,967, a rise by 33% over 2,226 reported in 2014. There is a small difference in the process of census as well, in 2014, tigers aged 1.5 years or older were counted whereas the current report has the cut-off age as 1 year but this is also questionable and bewilders me that how the foresters or principal scientists involved in the work of tiger census could be able to determine that how many tigers are in the 12-18 month age group in the population of 2,967, and how the estimation determines the age of a tiger. This has been my experience as a Director of a national park that tiger cubs don't grow very fast beyond 3 months. Hence, 1 and 1.5 year are synonymous in the context as the difference is not ocularly discernible. We have signed an international treaty at St Petersburg with a vow to the target of doubling tiger population by 2022. This is by far the biggest increase in terms of both numbers and percentage since the four-yearly census using camera traps and the capture-mark-recapture method began in 2006. The number that year was 1,411; it rose by 295 (21%) to 1,706 in 2010; and by 520 (30%) to 2,226 in 2014. Tiger numbers are always projected in a range 2,967 is the mean of an estimated range of 2,603 to 3,346. According to the report, as many as 2,461 individual tigers (83% of the total) have actually been photographed by trap

cameras. In 2014, only 1,540 individuals (69%) were photographed. The report does not contain numbers of other predators like leopards. But better tiger numbers are generally seen as indicating good prey bases and habitat. More than 80% of the world's wild tigers are in India, and it's crucial to keep track of their numbers. Authorities claim that the census is the world's most extensive biodiversity mapping exercise. A total 3, 81,400 Sq. km of forests were surveyed; 5, 22,996 km on foot. 3, 17,958 habitat plots were sampled for vegetation and prey dung. There were 26,838 camera trap locations, which covered 1, 21,337 Sq. km. A staggering 3, 48, 58,623 wildlife pictures were captured. Of them, 76,651 were of tigers; 51,777 of leopards. The entire effort consumed 5, 93,882- man days.

STATES WHERE TIGER POPULATION INCREASED MOST:

The biggest increase has been in Madhya Pradesh, a massive 218 individuals (71%) from 308 in 2014 to 526. In Maharashtra, the number has gone up from 190 to 312 (64%), and in Karnataka, from 406 to 524 (118 no, or 29%). Uttarakhand has gained over 100 tigers (340 to 442; 30%). However, since tigers keep moving between states; conservationists prefer to talk about tiger numbers in terms of landscapes. India's five tiger landscapes are: Shivalik Hills and Gangetic Plains, Central Indian Landscape and Eastern Ghats, Western Ghats, North-East Hills and Brahmaputra Plains, and the Sundarbans.

STATES WHICH HAVE DONE BADLY: Only one of the 20 tiger-bearing states has seen a

fall in numbers Chhattisgarh, where the census counted 19 tigers, significantly fewer than the 46 of 2014. The report has cited law and order as the reason large parts of the state are hit by the Maoist insurgency. Greater conservation efforts are needed in the “critically vulnerable” Northeast hills and Odisha. No tiger has been found in the Buxa, Palamau and Dampa reserves.

WILDLIFE CONSERVATION IN INDIA, ARE WE REALLY SERIOUS?

Fast-track forest clearances that are an indicator of India's development also pose a question—what is the future of wildlife in India? Wildlife conservation in India has a long history, dating back to the colonial period when it was rather very restrictive to only targeted species and that too in a defined geographical area. Then, the formation of the Wildlife Board at the national level and enactment of Wildlife Act in 1972 laid the foundation of present day “wildlife conservation” era in post-independent India. The Environmental Protection Act, 1986, and notifications issued there under made serious efforts to protect wildlife habitats and wildlife corridors. With the opening up of Indian market and process of globalization, the country has made significant progress in achieving higher Gross Domestic Product (GDP) but, on the other hand, disturbing developments about dilution of conservation efforts on the part of the system of governance on one side and a significant increase in the death toll of protected species, combined with intervention within Protected Areas came to fore. Take for instance, the restrictions by Environmental Impact Assessment (EIA) for Development Projects, covering more than 30 sectors as far back in 1994, surprisingly omitting all railway projects from its ambit. The history of last 20 years bears testimony to the sad fact, in attempts of the so called “development lobby” to establish practices like “green blockade”. The 48 projects recommended for clearance in January 2015, if undertaken, will convert 2,144 ha of forest land within the Protected Area. Expansion

of linear infrastructure like roads, railways and power lines in Central Indian and Eastern Ghats tiger landscape is fragmenting natural landscapes and severing wildlife corridors (Wildlife Conservation Trust). The WCT analyzed 399 out of 1697 proposals for linear infrastructure submitted to the Ministry of Environment Forests and Climate Change (MoEF & CC) post-July 2014. This has been found that in an overwhelming number of cases 345 (86 per cent) the user agency has denied the requirement of ‘wildlife clearance’,” observes the report. The total cost of the 399 identified projects is approximately Rs 130,000 crore. The following table gives us fairly good idea about the linear infrastructure in the wildlife areas in different states. With nearly 86 per cent of the total project proposals cleared, what can we expect of tiger conservation? In the month of July 2019 the Ministry of Environment, Forest and climate change has exempted 13 pending railway projects, worth Rs 19,400 crore (\$2.8 billion) and spread over 800 hectares of land, from the process of seeking forest clearances under Forest conservation Act 1980 and it is believed that these clearances could adversely impact a national park, a tiger reserve, a tiger corridor and wildlife sanctuaries across the states of Uttar Pradesh, Madhya Pradesh, Karnataka and Goa. The Forest (Conservation) Act of 1980 prohibits the use of any forest land for non-forest activities without prior approval of the Central government. The Railway Ministry has come up with a bizarre and unacceptable explanation for this, they argued that this land was owned by the railways before 1980, the year the Forest (Conservation) Act (FCA), was passed, and so the Act did not apply to this land and surprisingly our forest bureaucrats did not utter a word on this. Surprisingly in May 2019, the Ministry of Environment, Forest and Climate change issued a circular to all state governments that the FCA, 1980, will not apply for doubling of track and gauge conversion projects, if the land is railway land and was under non-forest use prior to 1980.

TABLE SHOWING STATEWISE LINEAR INFRASTRUCTURE PROJECTS

(Project cost in Rs. crore)

STATES	ROAD	RAIL	IRRIGATION
Maharashtra	18,393	4,323	2,420
Madhya Pradesh	8,076	3,396	18,703
Chhattisgarh	4,844	14,441	2,266
Jharkhand	1,479	10,757	2,268
Odisha	7,037	4,846	1,073
Telangana	1,297	0	16,390
Andhra Pradesh	2,232	1,313	1,821
Rajasthan	3,366	0	0
Total	46,724	39,078	44,941

The exemption now granted to these projects from the forest clearances process means that there will be no scrutiny or due diligence before forests are diverted for other uses. Usually, any proposal to use forest land is vetted and scrutinized by the state government, the divisional forest officer and eventually the headquarters of the central environment ministry or their regional offices, depending on the forest area to be diverted. Linear projects such as railways and highways are approved by the regional empowered committees. This scrutiny helps understand the unintended impact on wildlife, forest cover and long-term environmental sustainability of the project. For instance, some of the 13 projects now exempted from the process pass through notified tiger reserves and national parks. There will now be no scrutiny of their impact on the movement of wildlife, or on the break-down of forests. These projects, which include doubling of tracks and gauge conversions, were approved after discussions over two years, and backtracked on the government's order from December 2017 that all forest land used by the railways for doubling or gauge conversion would be subject to forest approvals, irrespective of ownership. The ministry's circular exempting these projects from forest clearances is contrary to the

Forest (Conservation) Act's provisions. Over 500 projects were cleared in India's Protected Areas and their 'Eco-Sensitive Zones' by the National Board of wildlife over the four years, between June 2014 and May 2018. In comparison, the preceding United Progressive Alliance (UPA) government had cleared 260 projects between 2009 and 2013. No more than 1.1% projects were rejected annually, on average, between June 2014 and May 2018, dropping from 11.9% under the previous UPA government between 2009 and 2013. Approved projects will impact national parks, tiger reserves and this is estimated that at least four of the 13 approved projects will fragment either a national park, a tiger reserve, a tiger corridor or a wildlife sanctuary. If the 261 km Katni-Singrauli line is doubled, 33 km will pass through the Sanjay Dubri National Park in Madhya Pradesh, and will also disturb the tiger corridor connecting Bandhavgarh with the national park. In July 2017, the National Tiger Conservation Authority told the railway ministry that 250 km of railway lines, including the Katni-Singrauli line, pose a high degree of threat to critical tiger habitats, according to a presentation made to the railway ministry in 2017. The doubled Hospet-Tinaighat-Vasco line will pass through Goa's Bhagwan Mahaveer Sanctuary and

Karnataka's Dandeli sanctuary while the Lucknow-Pilibhit gauge conversion will increase traffic and construction inside the Pilibhit tiger reserve in Uttar Pradesh. At the root of these approvals is the Akola-Khandwa gauge conversion project. In 2017, when the Akola-Khandwa project came to the environment ministry for forest clearance, the railways said that the project did not need a fresh forest clearance since the gauge conversion would happen on land that was in their possession before 1980. The project, which involves converting the 176-km metre-gauge line into a broad-gauge line, received the approval of the environment ministry in January 2017. Of the 176 km, 18 km passed through the critical tiger habitat at Melghat tiger reserve, home to more than 50 tigers, and 40 km passed through forested areas. The project would divert 161 hectares of forest land from the tiger reserve and the estimated cost was Rs 2,000 crore (\$310 million). In December 2017, the environment ministry clarified that even if the railways owned the land, they would need to apply for forest clearance since fresh forestland was to be diverted, according to a government order. This clarification was based on the opinion of the Ministry of Law and Justice, the order said. In late 2018, the approval for the Akola project was challenged before a Central Empowered Committee (CEC) constituted by the Supreme Court, which asked the National Board of Wildlife to review the project's clearance given its impact on a tiger reserve. The NBWL sent the proposal back in February 2019. Given the back-and-forth on forest clearances for railway land, the railway ministry referred the matter to the Attorney General of India (AG), K. K. Venugopal, who sided with the railway ministry. In his 11-page opinion, issued in April 2018, AG Venugopal said that the Railways Act, 1989, gives the railways the power to execute necessary works even if it alters the course of any rivers, brooks, streams or other water bodies. The opinion of the AG is not a correct statement of laws as it does not take into account breaking up of

land, and every single court direction that has said that the Forest Conservation Act will apply if there is a fresh requirement of forest land.

MANAGEMENT EFFECTIVENESS EVALUATION (MEE) REPORT 2018: However, an analysis of another report, Management Effectiveness Evaluation (MEE) of Tiger Reserves 2018, also released on the same day by the Prime Minister but nobody finds any mention of it. This report, shows that at least half of India's 50 tiger reserves are facing threats from linear infrastructure like roads, highways and railway lines. At least 20% of India's total tiger reserves are also threatened by invasive plant species such as *Lantana camara*, and about 20% of the reserves have unsustainable pressure from pilgrims visiting temples inside the tiger reserves, notes the report. Some of the other threats outlined in the report evaluating tiger reserves were poaching, pressure on tiger habitat from villagers living inside tiger reserves, human-wildlife conflict, lack of forest staff, hunting of animals, hydropower projects, mining, improper garbage disposal, pollution, and climate change. The tropical dry forest is particularly severely invaded owing to its history of anthropogenic disturbance which is known to result in high numbers of exotic species. Dry forests in southern India are also critical habitats for globally threatened species such as the tiger (*Panthera tigris*), Asian elephant (*Elephas maximus*), gaur (*Bos gaurus*) and wild dog (*Cuon alpinus*). Yet exotic plant invasions in this endangered forest ecosystem have hardly been addressed.

NO STUDY ON EXOTIC SPECIES IN INDIAN PROTECTED AREAS: Invasive plant species in Indian protected areas have received relatively little attention until recently. This may partly be due to a historical emphasis on wildlife protection, rather than on a broader science-

based approach to conservation of biodiversity and ecosystem functioning. A literature review of invasive plant species in India showed that nearly 60 % of all studies have been done since 2000, and only about 20 % of all studies are from protected areas. Studies from protected areas have largely focused on a small subset of invasive alien plants, and almost half these studies are on a single species, *Lantana camara*, probably reflecting the species' ubiquitous distribution. The spread of alien plants in India has been both ecologically and human mediated. Efforts to manage plant invasions have, in the past, been diluted by the ambivalence of managers attempting to find beneficial uses for these species. Despite growing knowledge about the harmful impacts of certain invasive plants on native species and ecosystems, their deliberate spread has continued, even till quite recently. And, despite the successful implementation of management initiatives in some protected areas, these efforts have not expanded to other areas. The lack of a national coordinated effort for invasive species monitoring, research, and management is unfortunate as we are not able to understand its impact on the food chain in the ecosystem.

CORRIDORS ARE MISSING: The obvious function of corridors is to facilitate physical movement, which is crucial to the long-term viability of animal population: feeding/foraging, seasonal migrations as well as permanent movements in case of habitats being rendered unfit (due to climate change or other anthropogenic factors) are facilitated by, and occur through, corridors. Moreover, these wildlife corridors play an important role in the breeding process of tigers by connecting large patches of tiger habitat, we ensure that there is a genetically healthy tiger population as well as space, for transient and dispersing animals to

cross to new areas to establish and maintain healthy breeding populations of tigers in the wild. India has a number of wildlife corridors, but they need to be well-defined. As of today, The Wildlife (Protection) Act, 1972 ('WLPA') does have provisions for notification and management of protected areas, but hasn't addressed connectivity in any clear manner. In the scientific study, an increasing emphasis on linear infrastructure is stated as a major reason for habitat fragmentation and isolation of species. Whether it's roads, trains or power lines, the increasing human needs without sufficient consideration for wildlife protection has been detrimental not only to the forests, but also to the wildlife and human communities that live around it. The unsustainable development has only had an adverse impact on the ecological status in these areas, and that needs to be addressed properly. Tiger and elephants' movement routes have been affected, building has taken place without any attention to the ratios of built up areas to green areas, and noise and light pollution has not been discussed. In many regions the demand for water has impacted on the water table of the region and unsustainable pressures on rivers and streams. All linear intrusions in the forest areas are a major form of disruption, and destroying the ecological integrity of that area and adversely affecting wildlife found in that area. Many of them cause irreversible damage to the area, many permanently blocking the corridors. It is clearly evident from the perspectives of WWF programme officers, environmental lawyers and conservationists, that as of now, there are no guidelines that define wildlife corridors in India. This is an area that needs attention. While human-animal conflict is inevitable, there is no denying that effective law enforcement, scientific research, and strong mitigation measures

are crucial in maintaining ecological balance. These forest corridors are like umbilical cords, without which biodiversity will perish. Coal and non-coal mining, thermal power, iron, steel and cement industries pose the largest threats to forest contiguity in this landscape. Corridors linking eight tiger reserves in central India Bandhavgarh, Sanjay-Dubri, Palamau, Kanha, Achanakmar, Satkosia, Simlipal and Tadoba-Andheri stand to be impacted in varying degrees if mining companies get their way. A geographic information system (GIS) analysis conducted by the Eco-informatics Lab at the Ashoka Trust for Research in Ecology and Environment (ATREE), Bengaluru, shows that mining existing forest areas will lead to the destruction of more than one million hectares of forest, of which more than 739,000 hectares is dense forest. If the coal blocks are opened up by the government, connecting forest corridors between several of the major protected areas in central India will stand isolated. Altogether, 13 coal fields in this landscape will impact eight tiger reserves. These reserves are home to more than 250 tigers and other endangered wildlife, and connecting forest corridors are essential for their survival.

HABITAT LOSS IS PROBABLY THE GREATEST THREAT TO THE VARIETY OF LIFE ON THIS PLANET TODAY:

It is identified as a main threat to 85% of all species described in the IUCN's Red List (those species officially classified as "Threatened" and "Endangered"). Increasing food production is a major agent for the conversion of natural habitat into agricultural land. Forest loss and degradation is mostly caused by the expansion of agricultural land, intensive harvesting of timber, wood for fuel and other forest products, as well as overgrazing. The net loss in global forest area during the 1990s was about 94 million ha (equivalent to 2.4% of total forests). It is estimated that in the

1990s, almost 70% of deforested areas were converted to agricultural land. Around half of the world's original forests have disappeared, and they are still being removed at a rate 10x higher than any possible level of regrowth. As tropical forests contain at least half the Earth's species, the clearance of some 17 million hectares each year is a dramatic loss. Human impact on terrestrial and marine natural resources results in marine and coastal degradation. Population growth, urbanization, industrialization and tourism are all factors. In 1994, it was estimated that 37% of the global population lived within 60 km of the coast. Poverty, consumption and land-use patterns contribute to the degradation of marine habitats and to the destruction of the species that rely on them to survive. The Indian government has diverted over 20,000 hectares of forest area for developmental activities such as mining, thermal power plants, dams, road, railways and irrigation projects in the past three years (2015-18) across India. According to the official data revealed by the National Democratic Alliance government in Parliament in December 2018, a total of 20,314.12 hectares of forest land (almost the size of Kolkata) was diverted in three years 2015-2018 (till December 13, 2018). During this period, the ministry had received a total of 4,552 proposals and of those 1,280 (28.11%) got approved. But the diversion of forest land for developmental projects has always been a contentious issue and in the past 10 years the opposition to diversion has increased with environmentalists repeatedly alleging that the union environment ministry only works like a rubber stamp clearing whatever projects come to it, seeking diversion of the forest land. According to information revealed in the Parliament, Telangana topped the list with 5,137.38 hectares of forest land diverted, followed by Madhya Pradesh with 4,093.38

hectares and Odisha with 3,386.67 hectares of forest area diverted. The three states together account for over 62% (12,617.43 hectares) of the total forest land diverted during the said three-year period. The reasons for diversion of forest area varied from irrigation, hydropower, road and railway projects to defence, mining, transmission line, schools and wind power projects. Of the total forest area diverted during the said time, the highest amount was diverted for irrigation projects, followed by mining and thermal power plants.

GENETIC POLLUTION IN INDIAN TIGERS:

India's tigers are facing extinction owing to a collapse in the variety of their mating partners and the resultant lack of genetic diversity. India is home to around 60 per cent of the world's wild tigers, and even here their numbers remain low and genetic diversity is declining rapidly making them increasingly vulnerable to extinction. Scientists have compared genetic data from modern tigers with historical tigers shot during the time of the British Raj (1858-1947: the

period of British rule over India) in order to gain a historical perspective of genetic diversity. Researchers identified a very high number of DNA variants in the tigers shot during the British Raj 93 per cent of which were not present in the Indian tigers of today. This is due to loss of habitat and habitat fragmentation, meaning lower population sizes, and the prevention of tigers from dispersing as they once would have, which means their gene pool is no longer mixing across the subcontinent. This is important because tigers, like all other species, need genetic diversity to survive especially under climate change so what diversity remains needs to be managed properly so that the Indian tiger does not become inbred, and retains its capacity to adapt.

(The author is retired PCCF & HoFF of U. P. He is recently awarded a degree of "Doctor of Science" (D.Sc.). Vana Premi congratulates him for this achievement. He can be reached on mobile number 9450877777)

"Years later I was in the Sudan on a conservation project when I heard an incredible story on good authority that sounded similar to my own. During the twenty-year war between northern and southern Sudan elephants were being slaughtered both for ivory and meat and so large numbers migrated to Kenya for safety. Within days of the final ceasefire being signed, the elephants left their adopted residence en masse and trekked the hundreds of miles back home to Sudan. How they knew that their home range was now safe is just another indication of the incredible abilities of these amazing creatures."

- Lawrence Anthony

“WHERE THERE IS A WILL, THERE IS A WAY”**(A case of successful eviction of encroachments in Kaghaz Nagar Division)****By****P.K. Sharma**

I had worked in Kaghaz Nagar Forest Division from 1990 to 1992. Prior to my joining, with the abetment of the extremist's vast stretches of virgin forest had been clear felled for the purpose of cultivation between 1988 and 1990. The relentless endeavor of the staff in preventing the encroachments by way of booking cases against the offenders, apprehending and prosecuting them in the court of Law, had led to direct confrontation between the Forest staff and the extremists who had been supporting the encroachers. The situation deteriorated to such an extent that it had become virtually impossible for the staff to go into the forests to discharge their legitimate duties in view of the deluge of threats to their lives from extremists. The extremists went on rampage to prove their point, burnt down the existing Forest Rest House, Forest Range Office and other buildings at Bijjur in June 1989. Many of the members of staff were humiliated and threatened by the extremists and severely warned not to come in the way of the illicit felling of forests by villagers for the purpose of cultivation. They had been warned not even to take cognizance of the illegality of the action and forget about booking of the offence cases and to arrest and prosecute the people in the Courts.

But the brave Forest Range officer, Bijjur late **Sri A. Kondal Rao**, was not frightened by these threats. He encouraged and motivated his staff not to be afraid of these threats and carry on the duty of protecting the forests. He intensified the vigilance and patrolling in Bijjur Range. Wherever he found people indulging in the destruction of forests, he had gone ahead

with arresting the offenders, producing them in the court of law and booking the offence cases. Despite several warnings he did not stop discharging his legitimate duties. Extremists were terribly annoyed and unhappy. They decided to eliminate him so that message goes to the other Officers and staff not to come in the way of the extremists.

Sri Kondal Rao had come to Kaghaz Nagar on the fateful day, 24th of Feb 1990, to attend to office works. He was carrying on his work from inside the house of a Forest Section Officer, located in the Forest Complex at Kaghaz Nagar. In the evening hours few armed extremists barged into the house where the FRO was working, directed the support staff to leave the Quarter and shot at him at point blank range. This led to the instant death of the brave FRO. This incident of cold-blooded murder, the murder most foul, had severe demoralizing effect on the Officers and staff. With the possible fear to the life of the Officers, all the Officers from the rank of Forest Range Officers upwards were transferred outside the Division. All the activities had been suspended and had come to a grinding halt in the Kaghaz Nagar Forest Division. People of Kaghaz Nagar town were shell shocked. The district administration had been paralyzed. The Law & Order situation had deteriorated to such an extent that it became almost impossible for the Govt. machinery to stop the forest felling and save the forest in the succeeding months. There was, however, silent but outright condemnation in the public against the murder of a sincere Forest Officer as well as butchering of the forests.

Probably the public voices against forest felling and cold-blooded murder of duty minded FRO had reached the top echelons of the extremists. I heard that the top brass did not like the action of the local *Dalam* Leader and reprimanded him. This wrong action probably forced them to call a halt to the reckless destruction of forests. Somehow the extremists decided not to encourage and support illegal felling of the forests for cultivation. Therefore, in the remainder part of 1990 and 1991 and the beginning of the 1992 no major cases of clear felling of the forests were noticed and reported.

I and my Sub-DFO Sri Y. Babu Rao, IFS, had received warning cum advice from the extremists of People's War Group through a letter, of not venturing into the forests for any kind of inspection including visits to the Beedi Leaf collection centers (*Khallas*). We were clearly warned not to bother about the quantity and quality of Beedi Leaf being brought by the villagers (Beedi Leaf collectors). I was not prepared for this. If I was to be frightened myself, I would not have had the moral authority to direct the protective Officers and staff to go to the forests for discharge of their legitimate duties. I started touring the forests fearlessly, with reasonable precautions. Some Officers still requested me not to tour the forest areas, but I had firm belief that so long as my intention was good, in the interest of protection of forests and the people, no harm would be caused to me. Also, if I was to die, it could happen in the safe sanctuary of my house as well. "***Jaanko raakhe saaiyan, maar sake na koi***", i.e., **Nobody can kill one if God protects him.** This inspired the other Officers and staff also to discharge their duties with courage and confidence. Probably extremists also came to know about the sincerity, honesty and integrity with which I was working and decided not to trouble me or other Officers.

Many a thing, for good happened in the Division in the next two years. I will be writing about these later on. There were no fresh incidents of encroachments for almost 2 years. However, in the month of March 1992 I noticed some felling over an area of approximately 13 Ha in Compartment. No. 39 of R.F. Block Garlapet in Malini Beat of Sirpur Range. The forest in this beat consisted of miscellaneous tree growth of density of approximately 0.6. The felling's were scattered but systematic and scrupulous with a view to clear fell the entire area in due course of time so that it could be brought under plough. A small patch of approximately 0.4 Ha had been clear felled. Part of the felled tree growth had been used in the erection of 13 huts and the remaining felled material was burnt down.

Enquiries revealed that the offenders had come from nearby villages of Chinna-malini, Medipalli and also from across the border i.e., Chiklipatnam Village of Maharashtra State. There were 13 families in all and they belonged to S.C. and S.T. communities. They were landless labor. They were under the impression that forest lands could be encroached upon and that the same would be regularized by the Government as had been done in the past. They were referring to the regularization of pre 1964 encroachments by the GOAP in 1977. They were clearly told that at that point of time there was no such policy and that it was not at all in the hands of the State Government in view of the Forest Conservation Act of 1980. Hence forest lands could not be assigned as per law. They were clearly told that their action amounted to an offence and a gross violation of the Forest Act. The encroachers replied that they were not aware of the Acts, nor the legal implications of the encroachment, but firm that they would not part with the already encroached land. The threat of prosecution proved futile and they refused to vacate the land.

It will not be out of place to mention here about the prevailing law and order situation in the area, between 1990 and 1992 had deteriorated further. The extremists had almost established their supremacy and ran parallel authority by terrorizing one and all. They were in a position to strike at will at any place and cause damages to the men and Government as well as private property. Generally, all the actions of burning of public and private properties of the extremists were in retaliation to killing of some extremists in encounters elsewhere in the State. As a result of this policy of the extremists, the staff quarters of the Forest Department became their soft targets, being located in isolated places away from habitations. In a short span of 8 months, eight buildings of the Department were gutted down. First one to go was the Range Office, Sirpur in June 1990, within a month of my joining the Division. Next target was the Range Office Complex Karjelli (consisting of four buildings) in October 1990, then fell the Forest Rest House, Dabba in November 1990 and Forest Guard quarter, Ankoda in January 1991. All these burnings and damages to the Departmental properties had severe demoralizing effect on the staff and they found it difficult to stay in the forest area and discharge their legitimate duties.

In the above circumstances the felling in Malini Beat did not come to the notice of the staff immediately, as the site in question was located in the extremist infested interior forest area. It came to my notice during random inspection. I was determined to check further felling and evict the encroachers from the forests. I was of the firm opinion that unless felling were stopped and encroachers were evicted the problem would continue and could spread further. Hence it was essential to nip the problem at the bud stage itself; else inaction would send wrong signals

and fresh spurt of felling in the Division could start again.

In the existing circumstances it was not possible to take drastic action of evicting the encroachers, single handedly by the Forest Department. Hence, I considered it necessary to appraise & take the assistance of Dist. Administration. I contacted the Assistant Collector, Asifabad **Sri Karikal Valiven, IAS**, and the Asst. Superintendent of Police and appraised them of the situation in detail. After due deliberation it was decided to evict the offenders by peaceful means, i.e., by talking to them and persuading them to leave the encroached forest land peacefully and go back to the village/s wherefrom they had come. If they did not agree, the Assistant Collector was of the view that could be rehabilitated elsewhere, outside the RF. However, I was not in favor of rehabilitating the encroachers in Government lands as it would tantamount to rewarding the offenders. Assistant Collector however reasoned that in all probability the encroachers would not be leaving the forest lands merely by talks; and forcible eviction was ruled out even with the help of Police in the prevailing circumstances. He further explained that certain Govt. lands were available near Kaghaz Nagar for allocation to the weaker sections of society under a Scheme; hence this would be the best option available to protect the existing forests and evict the encroachers. I concurred with him and chalked out a plan of action.

As decided, I and the Asst. Collector along with supporting staff went to the spot for inspection and interaction with the offenders/encroachers. On reaching the spot, all the encroachers were called and the Asst. Collector talked to them at length. He took pains to impress upon the encroachers about the importance of forests and ill effects of deforestation and requested them to

stop further deforestation. The Mandal Revenue Officer, Sirpur also informed the encroachers about the futility of their attempt to encroach upon the Reserve Forest. The Assistant Collector also told them categorically that no land could be assigned to them by Government within the R.F. He appealed to them to see the reason and vacate the encroached forest land peacefully and return to their villages. But his words fell on the deaf ears. The encroachers were adamant and not inclined to leave the forest land as advised by the Asst. Collector. Finally, as decided earlier, the Asst. Collector offered them Govt. non-forest land elsewhere in the Mandal for rehabilitation. Though the encroachers were reluctant to leave the forest lands, at last they agreed to accept the offer, on the condition of arranging transport for the persons and their belongings. We agreed to their demand & had a sigh of relief. At last forest lands were being spared.

Having done this, we, i.e., I and the Assistant Collector discussed and deliberated about the modalities of vacation and rehabilitation with the encroachers and finalized the plan. MRO, Kaghaz Nagar identified the alternate land for rehabilitation in the village Easgaon. Assistant

Collector decided to provide 5 Acres of land (2 Acres of Wet land and 3 Acres of Dry land) to each family. The land was shown to the encroachers and they had agreed to accept the same.

Finally, in the first week of July 1992 all the 13 encroacher families were evicted from the forests (Compartment No.39 of R. F. Block Garlapet). Forest Department arranged the transport of encroachers, their family members, their personal belongings and hutting material to Easgaon. All these families were happy to be relocated and rehabilitated in the village. This shows that if all the wings of Government function in a coordinated manner, even in the back-drop of worsening law and order situation, seemingly impossible task of eviction of the encroachers from the forestland could be accomplished. This particular task could be executed because of sincere, active and full-fledged involvement of the then Assistant Collector Asifabad **Sri Karikal Valiven** from the beginning to the end, proving once again the old age adage "**Where there is a will, there is a way**". (The author is a Retired PCCF & HoFF of Telangana and can be reached through e-mail I. D.pareshvyas22@gmail.com)

"Children who spent time in green spaces between the ages of seven and twelve tend to think of nature as magical. As adults they are the people most likely to be indignant about lack of nature protection, while those who have had no such experience tend to regard nature as hostile or irrelevant and are indifferent to its loss. By expurgating nature from children's lives we are depriving the environment of its champions for the future."

Green Quiz Championship - October 2020

Quiz Master: Dr K. Tirupataiah

This month's quiz is on **"Wildlife and related matters and Current Affairs"**

1. In which National Park did PM Modi shoot for the wildlife adventure Man vs Wild? a) Rajaji NP, b) Nanda devi NP, c) Jim Corbett NP, d) Gangotri NP	2. _____ hosted the show Man vs Wild with PM Modi
3. Which is the costliest animal in NZP for adoption?	4. In which year did NZP launch Nocturnal Animal House? a) 1981, b) 1982, c) 1983, d) 1984
5. In which year did NZP launch Lion Safari? a) 1971, b) 1972, c) 1973, d) 1974	6. Which agency was established by Gol to improve awareness as well as consciousness on Wildlife preservation?
7. Which UN Organization provides Tools for Sustainable Wildlife Management? a) FAO, b) UNDP, c) UNEP, d) UNICEF	8) Floods and Wild fires have spelt doom to millions of Wildlife across the World. Which day is celebrated as World Calamity Control Day? a) Oct 12, b) Oct 13, c) Oct 14, d) Oct 15
9. Animal Protection Index ranks Countries for Animal Welfare. Which country is ranked as the best? a) Australia, b) Sweden, c) Austria, d) USA	10. Oct 4 is observed as the World Animal Welfare Day. It is the feast day of the Patron Saint of animals/ecology. Who is he? a) St. Patrick, b) St. Francis, c) St. Thomas, d) St. Andrews
11. Who said, "Earth has enough resources for our need but not for our greed"? a) Nelson Mandela, b) Abraham Lincoln, c) Mahatma Gandhi, d) Mahathir Mohammad	12. During which PM of India time was the Wildlife Act 1972 promulgated?
13. Vegetarianism is believed to help in Animal Welfare. When is World Vegetarian Day observed? a) 1 st OCT, b) 2 nd Oct, c) 3 rd Oct, d) 4 th Oct	14. Wildlife Comedy Photography Awards are given every year in October on? a) 19 th Oct, b) 20 th Oct, c) 21 st Oct, d) 22 nd Oct
15. India stormed out of which meeting in Russia recently protesting display of a controversial map?	16. International Day for Preservation of Ozone layer was observed on which day? a) 16 th Sep, b) 17 th Sept. c) 18 th Sept, d) 19 th Sept
17. Israel signed a Historic accord with UAE and Bahrain in the presence of USA. What is the name of the accord? _____	18. International Day of Democracy was observed on. a) 14 th Sept, b) 15 th Sept, c) 16 th Sept, d) 17 th Sept
19. The Lok Sabha passed a Bill reducing the salaries of MPs for one year starting from April 2020. What was the percentage of reduction? a) 10%, b) 20%, c) 30%, d) 40%	20. The Djibouti Code of Conduct in which India joined as an Observer for "Blue Economy" and maritime security in: a) Pacific Ocean, b) Atlantic Ocean, c) Indian Ocean, d) Antarctica

(The quiz master is a retired PCCF from Telangana and can be reached on mobile number 8885532021)

Please see Page number 45 for Answers.

KARNATAKA – THE LAND OF TUSKERS AND TIGERS

By M N JAYAKUMAR

Karnataka is a very unique state comprising of vast stretches of the Western Ghats, the Eastern Plains and a portion of the Deccan Plateau. Consequently, the varied biotopes found in the state present a vast and rich biodiversity. A variety of agro-climatic, soil, altitude and rainfall patterns seen in the state have been responsible for declaring more than 30 Protected Areas in the state including 5 National Parks, and more than 25 Wildlife Sanctuaries and Conservation Reservations to give protection to a multitude of flora and fauna found in them.

The forests of Karnataka are home to nearly 100 species of mammals, 600 species of birds and a large number of reptiles and amphibians. The endemic nature of some of these species make the state unique as one need to come here only to watch them. The onset of monsoons makes the forests lively and vibrant with a number of water falls becoming very active. Jog falls in Shimoga district, Abbe and Iruppu falls in Kodagu district, Cauvery falls in Mandya district, Sathodi falls and Doodh Sagar falls in Uttara Kannada district and Gokak falls in Gokak are some of them. Jog falls is undoubtedly the best of the lot with the river Sharavathi cascading down to a depth of 850 feet during the rainy season and it is a must-see place for anyone.

There are 5 tiger reserves in the state – Biligiri Ranga Temple (BRT) Tiger Reserve (TR), Bandipur TR, Nagarhole TR, Bhadra TR and Kali TR (formerly known as Dandeli-Anshi (TR) All these TRs are situated in the Western Ghats with BRT TR having the distinction of having a slice of the Eastern Ghats as well. Tiger is at the apex of the Biological Pyramid in these reserves

whereas in the Sanctuaries and Conservation Reserves situated in the Eastern Plains and the Deccan Plateau, Grey Wolf is at the apex of the Biological Pyramid.

Tigers feed mostly on Chital, Sambar and Gaurs whereas the Grey Wolf mostly feed on Blackbucks and sheep and goat found grazing in the grass lands. The abundance of prey in the TRs is responsible to support the 3 major predators- Tiger, Leopard and Wild Dogs in these forests which is very unique

Karnataka had earned the Distinction of being called the “Tiger State of India “till about a year ago with a population of over 400 tigers and now just marginally behind Madhya Pradesh. Large cats are always charismatic and the sighting of a large cat in our forests is exciting and awe-inspiring. We do have the forests where there is a high probability of sighting tigers. In fact, tigers are being sighted almost every day in Bandipur and Nagarhole TRs from December onwards.

When it comes to leopards, there is a different story to tell. Normally, leopards are very adaptable and cunning, and, as a result it is difficult to sight them- let alone photograph them in our jungles. With better management of forests in Bandipur, BRT, Nagarhole and Mudumalai National Parks, the landscape in the Nilgiris Biosphere is now fast developing into a paradise for leopards. The frequent sighting of leopards in the Mysore district portion of Nagarhole TR has made it so popular that the Kabini backwater area is now popularly known as the Leopard Capital of India. The Kabini backwater area is an undisputed paradise for both Asiatic elephants and leopards, as well as

for the area's main predators – the tiger and the wild dog. The wildlife biomass of this National Park is stated to be second only to the legendary Serengeti in Tanzania. In order to sustain the three main predators, our forests will have to support a very strong prey base. This calls for a healthy habitat to be created and protected with equilibrium maintained to sustain the natural food chain. Fortunately, as of today, the forests of Karnataka are vibrant and brimming with a much higher proportion of large mammals and ungulates which provide food for the predators. The Nilgiris Biosphere Reserve, for example, has the largest number of tigers in a single landscape in the world, and recent population trends bodes well for the future of tigers.

The state of Karnataka has a very good population of Asiatic elephants and is now home to over 6000 of them, the highest number for any state in India and thus is the Elephant Capital of India as well. The fact that the number of elephants has doubled in the last 30 years is a testimony for the way the foresters of the state have managed and protected the crucial habitats. Most of the elephants are concentrated in the southern half of the state. Another redeeming feature of the elephant population is the fact that the male-female ratio of these pachyderms is highly encouraging as witnessed by the number of calves born each year. Therefore, we do see a large number of male elephants with beautiful tusks on them. The annual congregation of these mighty animals on the banks of river Kabini is an awesome sight and this happens every year between February and May.

The Western Ghats, or the Sahyadri's, constitute a mountain range along the western side of India. The range starts near the border of Gujarat and Maharashtra in the north, and runs southward approximately 1600 km through

the states of Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu, ending at Kanyakumari at the southern tip of India. The area is one of the world's threatened biodiversity hotspots because of intense biotic pressure that has resulted in degradation of the ecosystem and eventual extinction of species. The Ghats are home to over 5000 vascular plants, 30% of which are indigenous to the Ghats, over 500 species of birds, 35% of which are indigenous and include endangered birds like the Ceylon Frogmouth and Great Pied Hornbill. The area is home to nearly 100 species of mammals (nearly 20% indigenous) including endangered species like the Lion Tailed Macaque (LTM) and tiger. There are also 260 species of reptiles – King Cobra and Draco's, among them – in the area.

The range also has a number of fresh water fish and invertebrates, most of which are indigenous to the region. Similarly, 60% of amphibians are indigenous and endemic to the Western Ghats and the area has become a hotspot for discovery of new frog species in the last decade

The Eastern Plains and the Deccan Plateau also offer an opportunity to see wildlife of a different kind. Daroji Sloth bear Sanctuary, situated adjoining the world famous Hampi ruins, a world Heritage site declared by UNESCO, is an outstanding place to see the elusive Sloth bears. In my opinion, this is, perhaps, the best place in the world to see these animals. The Painted Spur-fowl, another beautiful bird, is a certainty in this sanctuary. The endangered Yellow-throated Bulbul could also be seen in Hampi.

We do get a large population of Bar-headed geese coming down in winters. One of the best places to see them is Magadi Kere (tank) in Gadag district where one can see upwards of 10000 of these winged beauties in good times.

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In the Memory of “Harika”- Our beloved Asiatic Lion (Female)

By Smt. N. Kshitija

7th September-2020 has been a sad day for many in Nehru Zoological Park. At around 12.30 PM on 07.09.2020 information about the demise of Harika our beloved Lioness is received. With a heavy heart I remembered the time when I saw Harika. After assuming the charge of Curator, Nehru Zoological Park, Hyderabad on 06.09.2018, I, in the process of visiting all the areas inside the zoo ventured to the safari park complex, wherein I saw Harika for the first time. In spite of suffering from fever, this young female was quite active, this beautiful animal pulled a cord in my heart and as I reached my home, my daughter excitedly asked me about my first day in Zoo and I told her about Harika who was suffering with fever. Later she became known to all my family members who kept on enquiring about Harika as my daughter told everyone that Harika has fever. After a couple of weeks Harika recovered from fever and released into the Safari Park for the public display.

Harika is an Asiatic Lioness born to Sire “Antony” and Dam “Saina” on 05.11.2014. She is one among 3 cubs and its siblings are “Harish” and “Harshita”. In the early 2020 Harika was observed to be dull and was going off feed some times. The animal was kept under observation and regular treatment was started based on the visible symptoms. However, her health got deteriorated and several diagnostic tests were done. The reports were also shared with scientists from IVRI, Dr Kaikalan and Dr Mahendran who has asked to further conduct Ultra sonography scanning, Echo Cardiogram and blood profiling. The diagnostic tests revealed that it is suffering with multiple complications like hepatopathy, Ascites etc. Dr Satish Kumar, Professor & Head, Veterinary

Medicine, College of Veterinary Science, Rajendranagar, Hyderabad, Dr Mahendran and Dr Karikalan, IVRI, Senior Scientist have been consulted in treatment of Harika. Since then her health conditions was closely monitored by the dedicated zoo staff right from Dy. Curator. Smt. A. Nagamani, Dr M. A. Hakeem, Dy. Director (Vet), Dr Shambulingam, Asst. Director (Vet) Dr Syed Asadullah, Veterinary Asst. Surgeon, Dy. Range Officer Smt. Anita, who never failed to miss a visit to Harika every day. The animal keepers Ravinder Reddy, Govindu and Yousuf took very good care of Harika to make her life comfortable. They have also taken up night duties on turn basis for Harika.

In fact, Harika has become very familiar to the Director Zoo Parks and also is enquired about frequently by the Chief Wildlife Warden.

In between it has suffered from respiratory distress and doctors suggested to get the Covid-19 test also done. But facilities of testing Covid-19 exist at Izzat nagar and Bhopal only. But due to lockdown, it was a problem of transportation and there was a possibility of the sample getting spoiled by the time it reaches these institutions. Then LaCONES, CCMB was approached. They were testing only for humans. Based on the request from Nehru Zoological Park, Hyderabad Central Zoo Authority has asked the LaCONES, CCMB (Laboratory for conservation of endangered species) Hyderabad to conduct the test and within 2 days LaCONES geared up for testing wild animals. Though Harika tested negative, she has been instrumental in establishing one more Covid-19 testing facility for its friends the wild animals which will benefit many Zoos of India. Harika was fed all types of feed depending on its disposition including

chicken, mutton, beef, rabbit and soups of the same.

In spite of the best possible efforts Harika left us on 07.09.2020, leaving behind great memories and a void in all the hearts.

The Post-mortem was conducted by Dr Laxman, Professor and Head, Pathology, College of Veterinary Science, Dr M.A. Hakeem, Dy. Director (Vet), Dr M. Navin Kumar, Dy. Director (Vet), Nehru Zoological Park, Hyderabad. It was found that the animal was suffering with multiple complications like hepatopathy. Ascites, respiratory problems and it was also revealed that most of the organs have failed including Heart.

The doctors who conducted post mortem of Harika felt that it is fighter and in spite of having

severe multiple complications, the animal has survived this long.

The Dy. Curator who regularly visited Harika and monitored its treatment very closely remember her fondly and always look towards its cage whenever she visits Lion Safari park.

The Dy. Director (Vet) has shared that in his 15 years' service in Zoo, Harika who is very cooperative to treatment has become very close to his heart and that he will never forget Harika.

The Nehru Zoological Park, Hyderabad never forget Harika as it inspired one and all with its fighting spirit.

(The author is IFS officer of Telangana cadre and presently working as Curator Nehru Zoological Park Hyderabad)

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This large tank also supports a good variety of birds and has been recently declared as a bird sanctuary.

Basur Kaval is another phenomenal area in Chikmagalur district where one can see a lot of Blackbucks, Indian foxes, the endangered Grey wolf and more than 60 species of birds and is a declared Conservation Reserve now.

I have had the pleasure of visiting most of the major National Parks and Sanctuaries of India and if someone asks me to name one district or place which is a must-see place and to be included in one's bucket list, then, I would say without hesitation that it would be Mysore. This is because, within a radius of about 100 km, we have so many beautiful natural places to see like the Cauvery Wildlife Sanctuary, BRT TR, Bandipur TR, Nugu Wildlife Sanctuary, Nagarhole TR, Arabithittu Sanctuary, Ranganthittu and a number of wetlands and lakes. Barring the

Asiatic lion and the One-horned rhino, all the major mammals of India and a variety of birds could be seen here. The additional advantage in Mysore is that being the capital of the erstwhile Mysore Kings, who were keen Shikaris (hunters) in the past, most of these forests had been scientifically managed and protected for over a century and the legacy was carried forward by forester's post-independence. The method of capturing wild elephants by 'Kheda' had become famous all over the world. Development of good infrastructure and tourist friendly initiatives taken in the last 3-4 decades has made Karnataka a dream destination for all the nature and wildlife lovers of the country and a real paradise for wildlife photographers

(Sri M. N. JAYAKUMAR IFS, FRPS, MFIAP is a retired Addl PCCF, Karnataka, and a world-famous wildlife photographer.)

Reminiscing a few encounters in the wild as Wildlife week is observed!

By

Dr B. Raghotham Rao Desai

The subject of wildlife is not new to write about and I had been writing features quite often for the periodicals covering sparrows (Mar., '14), Tigers (Sept., '15), Elephants (Oct., '16), small & big game (Mar., '19) and a variety of Avifauna (2019), in addition to a number of editorials on animal-man conflicts. The pressure from readers continues to write more for the wildlife week being observed during Oct., 2020 and for a change, I chose the above topic to highlight the behavioural aspects of wild elephants from a couple of personal experiences dating back to the service rendered over Hunsur Division around early eighties of the century gone by.

Before taking up those instances, let me state that the captivating article on 'Some interesting facts & Notable features of Elephants' is made to reappear as 'Trivia' at the foot of this article for convenience of the reader, while my conclusion for the disappearance of sparrows was something like this:

"As infrastructural axe was found to fall repeatedly on trees within several cities' core peripheries, the battle for green spaces faced with a deadly-mix of stealth and brute power, and that contributed mainly for the vanishing-act of the sparrows."

Now, coming to personal-experiences in the wild, I vividly remember two instances. One was when (Late) MP Mathur (My batchmate from Telangana-Region of A.P) visited me during that period with his family and we were all in Nagarahole Range. We had an experienced driver who got petrified in to inaction when it

was most needed ---- though fraught with risk, he should have hastily reversed our vehicle to a safe distance by meekly acknowledging the jumbo's 'right to passage. Instead he was panicky and reversed frantically by keeping an anxious eye alternately on the advancing wild elephant and the road behind, all of us fervently praying that our vehicle didn't end-up in an unseen ditch ---- but that was precisely what had happened and saved all of us in the bargain: the vehicle slid in to a ravine (in the desperation of the moment) well out of the jumbo's reach and all of us escaped mainly unscathed with only a few getting minor abrasions!

Another was sometime later when (late) R P Mishra (a year junior, from Bhopal, MP) when he visited along with his colleague & his family from Harihar Polyfibres, again occurring in the same Park on a road to Kutta. We found a wild tusker mopping the condensation off the windscreen of a truck parked on a side of that road ---- perhaps to get a better view of the cabin's occupant ---- as we stopped our vehicle to watch what was happening! The jumbo went away after some time and we reached the truck only to find the terrified driver cowered inside under the dashboard of the cabin. He told us that he was returning from Kerala and was so weary that he parked his truck to catch forty winks (since he was feeling a bit sleepy too) when he found the tusker suddenly coming towards his vehicle and then all this happened!

However, in our experience we had come across some stubborn wild elephants who obstinately

refuse to budge, holding us up for hours on arterial game roads, and then condescendingly move to a side to allow us to pass but we did not dare to chase an elephant once as it had truly menacing tusks!

Trivia:

1. Facts: Elephants belong to the order *Proboscidea* ---- derived from Latin 'Proboscis', meaning trunk ---- both Asian and African being the only living members of the order. Asian elephant ---- *Elephas maximus* ---- is smaller than its African cousin ---- *Loxodonta Africana* ---- with smaller ears (roughly shaped like that of Indian map), while African elephant has larger ears (roughly resembling African map)!

Elephants fan their ears to cool their blood ---- flowing through the network of arterial & Venus system ---- since they have no sweat glands on their body (and hence their body temperature cannot otherwise be regulated) like in other species such as humans. The ear is thus an important organ in removing body-heat, apart from hearing ---- the blood from various parts of an elephant's body being transported to the ears to get cooled thus, with the fanning motion. Asian female lacks tusks, unlike its African counterpart.

An Asian cow-elephant weighs 2.5 -3.5 tons, while a bull 3.5 – 5 tons. Elephants have short necks to balance their huge heads. Tip of the trunk is one of the key differences between Asian and African ---- an Asian elephant has only one 'finger-like', while its African counterpart has two 'fingers-like' (enabling it to grasp an object, while the Asian uses to scoop & hold objects against the underside of the trunk).

Asian elephants are of five strains: Indian, Burmese, Ceylonese, Sumatran and Malaysian, having been classified in to seven sub-species

---- based on their geographical distribution. A bull elephant without tusks is called 'makhana' ---- the tuskless males representing about 10% of Indian Elephant Community, while it is 90% in Sri Lanka. The energy saved from not growing tusks goes in to bigger & stronger head as also more powerful trunk ---- to compensate absence of tusks in fighting. It is not yet clear if 'Makhana' co-produces only 'Makhanas' or is there a segregation of genes into tuskers in the next generations. Tusks are the modified upper incisors ---- they are a status symbol and are potential lethal weapons in self-defence. They have regenerative capacity like nails in humans.

Elephants are very tactile (or touching others in a friendly or sympathetic way) in nature ---- using all parts of their body to interact with one another in all forms of behaviour (including parental-offspring play) ---- aggressive, defensive, exploratory, sexual and anti-predatory. The trunk is a tactile appendage, used in stroking, touching, exploring caressing or re-assuring in caretaking. It is formed by the fusion of the upper lip and the nose.

Elephants assert their absolute right over jungle tracks, not tolerating any intruders ---- while respecting humans' right of way as also that of vehicles on highways! They often express what can be perceived as 'joy' in different facets of their lives, showing explicit joy with the arrival of a new baby in the family!!

Elephants hear and respond to each other's loud calls from 4 kms away ---- they can also communicate within about 50 sq. kms range through infrasonic-communication-system.

2. Features: Twice the circumference of the front-foot print gives the approximate height of an elephant in the wild. Upper ridge of the ear of an elephant starts folding from the age of 10

years, and folds about an inch in 20 years ---- bulls of this age are considered competent to pass on their genes to next generation.

Elephants have to keep themselves feeding ---- on all three tiers of plant life (lower grass, middle bush and upper canopy) ---- for more than 16 hours as their food requirement is enormous. They drink 50-60 litres of water at a time, 3-4 times a day ---- the requirement calculating to 200-255 litres of water a day ---- the trunk normally holding 6-7 litres (or even 10 litres) of water each time

Elephant can run short distances quite fast: 25 km/hour ---- even with hobbles they can hop very fast, but cannot gallop like horses or run like oxen. The skin is very thick and hence is called 'pachyderm', but is very sensitive ---- it experiences pain when pricked.

The gestation period is 21-22 months and a calf at birth weighs 80-100 kg and 90-100 cms in height. Elephants can stand for long periods ---- they generally sleep standing, occasionally lying down if they find the place safe. They are efficient 'seed dispersers' ---- hard-coated seeds passing through their alimentary-canal (and out in the elephants' dung) are highly viable & germinate easily. They defecate 15-20 times and urinate 10-15 times (expelling 50-60 litres totally) a day.

Elephants have a remarkable memory for events and people. They are believed to be emotional towards their members of clans. They are matriarchal society ---- the leader of a herd

usually being and eldest and wisest cow. Males are loosely attached to the herd.

Elephants, captured from the wild, can never be completely domesticated ---- they always have a craving to return to the wild, unlike the ones born in captivity which come back home.

3. Conclusion: Elephants being valuable 'commodity', they need to be handled with care and respect. Chanakya (b. Taxila in 375 BC – d. Pataliputra or Patna in 283 BC, aged 92 years, known as Indian Machiavelli, born to Rishi Chanak) had prescribed in *Arthashastra* 'capital punishment' to a person who killed an elephant; and this was in the Maurya-period (some 2500 years ago) of Indian history!

An elephant is the largest of all terrestrial living mammals ---- still so elegant and versatile among all wild animals. A sight to be held when a '*Gajagamini*' is in motion! But a tusker remains victim of man's greed and persecution.

[Note: Relying on the notes (made about four decades ago in Hunsur division, the 'features' could be compiled. We had three elephant camps at *Thithimathi* (a very large one on the banks of Lakshmana theertha River, with over 4 dozen elephants), *Kalhalla* (a smaller camp of a dozen, near Murkal) and *Balekove* (a similar number of a dozen pachyderms, on the banks of Nagarahole stream)

(The author is a Retired IFS officer from Karnataka cadre and can be reached through e-mail I. D. raghothamrao@rediffmail.com)

"Humanity can no longer stand by in silence while our wildlife is being used, abused and exploited. It is time we all stand together, to be the voice of the voiceless before it's too late. Extinction means forever."

- Paul Oxtan

MUSK DEER

By

V. SANTHASEELA BABU

“Musk Deer” called as ‘*Kasturi Mrugam*’ in Telugu produces a substance with a persistent odour, obtained from the caudal glands of the male musk deer. Musk is commonly known as ‘*Kasturi*’ in India. ‘*Kasthuri*’ is used for manufacturing perfumes and traditional medicines. Musk is obtained from the musk pod, a preputial gland in a pouch, or sac, under the skin of the abdomen of the male musk deer. Fresh musk is semiliquid but dries to a grainy powder. It is usually prepared for use in perfumes by making a tincture in pure alcohol.

Musk deer belongs to genus *Moschus* of family *Moschidae*. This is the only genus that is existing in this family. Though it is called Musk deer it is not actually a deer. The deer belong to the family Cervidae but the Musk deer family is different from that of Cervidae which represent the real deer. They do not have antlers or facial glands as in the case of deer and they possess gall bladder, a single pair of teats, a caudal gland and a pair of tusks like teeth and a musk gland.

The habitat of Musk deer is mostly the alpine scrub forest areas in the Himalayan mountains. Their distribution is now confined to only Asia and are said to be extinct in Europe where they existed right from Oligocene. The Musk deer is similar to small deer whose build is sturdy and their hind legs are longer than their front legs. Their feet are adapted for climbing rough terrains. They do not possess antlers and the males have enlarged upper canine teeth which have formed into Sabre-like Tusks. Though they do not fall under the deer family their dental formula is same of that of a deer. Their height at the shoulder level is between 50 to 70 cm. and

are 80 to 100 cm. long. They weigh between 7 to 17 kg. The adult males alone possess the musk glands. The location of these glands is between their genitals and the umbilicus. Their female mates are attracted by the odor from these secretions. These musk deer are herbivorous. They live far from human habitations in hilly and forested environment. They maintain well defined territories by their scent mark with the caudal glands. and lead solitary type of life. These animals are generally shy in nature and are nocturnal or crepuscular. During their rutting season (season when males are sexually active) they leave their territories. They compete for female mates and fight with their other competitors by using their tusks as their weapons. The gestation period for the female musk deer is between 5 to 6 months and one or two fawns are born at a time. But the newly born fawn will be very tiny and motionless during the first month. This helps them to be safe from the predators. The young musk deer live off their mother's milk until they are about six months old and able to eat regular foods available in the wild. At 16 to 24 months old, they become sexually mature.

The scent glands are used in perfumes and the Musk deer are hunted for the sake of these glands. It is said that a Kilogram of this scent fetches about \$45,000 in black market. It is also said that the royal families in ancient times wore this scent and it is said to be ‘aphrodisiac’. Musk is with a persistent odour which is obtained from the caudal glands of the male musk deer. There is no easy way to tell by the scent only, unless

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**Photo of Musk Deer in Kufri Farm
taken by me During 1988**



Male Musk Deer with Sabre-like Tusks

For details please see Page number 30



For details please see Page number 25



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one has a good power of smelling and have experienced it earlier.

The following are the various species of Musk Deer in the genus *Moschus*:

Moschus moschiferus - Siberian musk deer - North East Asia

Moschus anhuiensis - Anhui musk deer - Eastern China

Moschus berezovskii - Dwarf musk deer - South China and Northern Vietnam

Moschus fuscus - Black musk deer - Eastern Himalayas

Moschus chrysogaster - Alpine musk deer - Eastern Himalayas

Moschus cupreus - Kashmir musk deer - Western Himalayas and Hindu Kush

Moschus leucogaster - White bellied musk deer - Central Himalayas

Himalayan Nature Park Kufri, popularly known as 'Kufri Zoo' was established in 1992. Prior to this, the area of the park used to be a Musk Deer Farm since 1965 managed with the objectives to breed musk deer in captivity, to study its behavior and to conduct research on methods to extract musk without causing injury to the animal. Enclosures for musk deer were constructed to establish this farm. Since this farm started attracting tourists and subsequently other Western Himalayan fauna including Brown Bear, Kashmir Stag, Barking Deer, Sambar, Yak, Blue Sheep etc. were also added and independent enclosures were constructed for these. A pheasantry was also added where Himalayan pheasants like Monal, Western Tragopan, Cheer Pheasant, Khalij,

Koklass and Red Jungle Fowl etc. were kept. "It was in the late seventies that there was a sizeable number of musk deer housed at the Kufri Nature Park and now the Government of Himachal Pradesh intends to send a proposal to the Centre to seek permission for starting a breeding and conservation project which will also prove to be a major tourist attraction.

The white-bellied musk deer or Himalayan musk deer (*Moschus leucogaster*) is a musk deer species occurring in the Himalayas of Nepal, Bhutan, India, Pakistan and China. It is listed as endangered on the IUCN Red List because of overexploitation resulting in a probable serious population decline. It was previously considered a subspecies of the Alpine musk deer, but was separated on the basis of different skull proportions. Himalayan musk deer occurs in parts of northern Afghanistan, Pakistan, Tibet, Nepal, Bhutan, and in northern India such as in Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh. It inhabits high Alpine environments above altitudes of 8200 feet. Generally, these deer are nocturnal in nature and during the day time they hide themselves under the dense cover of vegetation and prefer to be in private. During night time they come out and feed in open habitats and consume leaves of trees and shrubs. During the winter, they live by eating the lichens and climb small trees for feeding on leaves of the trees.

Himalayan musk deer can live for up to 10 to 14 years. Their predators include Leopard, Snow Leopard, Eurasian Lynx, Red Fox, Gray Wolf. Juveniles are sometimes killed by Yellow-throated Marten and Large Raptors. As the musk that is produced by this Deer is in high demand in the industries that manufacture perfumes and medicines, it is highly valuable. Since the

species is endangered and hard to find, its value on the wildlife trade market is very high. The hunting and trade of the white-bellied musk deer is the main threat to the species. As already stated above, one Kg of Deer musk sells at an exorbitant rate of \$45,000. This makes it one of the most valuable animal-derived products in the world. Hunters catch and kill the deer using snares. Though the males which produce the musk are aimed by the hunters, but during hunting, the females and young ones are also caught in the traps and are killed. Thus, the population of these Musk Deer is dwindling and lies at threat of extinction.

In India, Nepal and Bhutan the white-bellied Musk deer is protected by law. The uneven enforcement of legislation across the range of its occurrence is resulting in rampant destruction of this species. Strict enforcement of antipoaching laws in the region is very much essential in conservation of this species.

The following are the two Musk Deer sanctuaries located in Uttarakhand.:

1. Kedarnath Wildlife Sanctuary
2. Askot Wildlife Sanctuary

1. Kedarnath Wildlife Sanctuary: also called the “Kedarnath Musk Deer Sanctuary”, is a wildlife sanctuary declared under Wildlife Protection Act, 1972 and located in Uttarakhand. Its alternate name comes from its primary purpose of protecting the endangered Himalayan musk deer. Spreading over an area of 975 sq. km, it is the largest protected area in the western Himalayas. It is famous for Alpine Musk Deer, Himalayan Thar, Himalayan Griffon, Himalayan Black Bear, Snow Leopard and other flora and fauna. It is also internationally important for the diversity of its flora and fauna (particularly of ungulate species).

Located in the Himalayan Highlands with an elevation ranging from 3,810 ft. near Phata to the Chaukhamba peak at 23,189 ft. it was a notified reserve forest between 1916 and 1920. It was changed to a sanctuary on 21 January 1972, and has been designated a “Habitat/Species Management Area” by the IUCN. Since 1972, the area of the park has expanded from 967–975 ha.

The sanctuary takes its name from the famous temple of Kedarnath which is just outside its northern border. The entire 14 km route from Gaurikund to Kedarnath temple 11,759 ft. passes through the sanctuary in Uttarakhand.

2. Askot Wildlife Sanctuary: This sanctuary is located in the Pithoragarh district of Kumaun in Uttarakhand and the altitude ranges from 2,000 ft. to 22,654 ft. It covers almost 600 sq.km. The River Kali forms the international boundary and separates it from Nepal in the east and to the west it is bounded by West Almora Forest Division, to the north by Tibet and the south by Pithoragarh Forest Division. Other mammals found in this sanctuary include the Bengal tiger, Indian leopard, Himalayan jungle cat, Civet, Barking Deer, Serow, Goral and Himalayan Brown Bear. Many species of high-altitude birds are also found in this sanctuary.

The famous peaks: Panchchuli, Neodhura, Naukana, Chhiplakot, Najirikot; the passes: Lipulekh, Lumpiya lekh and Mankshang lekh; and the religious places: Bhanar, Chiplakot, Nairikot, Panchachuli, Kalapani and Chota Kailash (Adi Kailash) form a part of the Sanctuary. The forest blocks: Rugling, Jyotigad, Hiragumarhi, Duk, Sobla, East Ghandhura, West Ghandhura, Maitham, Akla and Daphia are Biodiversity rich habitats of the Sanctuary.

I have a personal experience with the 'Kasturi' (The Musk) derived out of this animal. I worked as Divisional Forest Officer, Tirumala on deputation to the Tirumala Tirupati Devasthanam, Tirupati from the year 1986 to 1989. The Lord Venkateshwara / Balaji of Tirumala temple is adorned with Kasthuri on His forehead as 'Namam'. The appearance of Lord itself is described as "Kasthuri Thilakam Lalata Phalake" i.e. Kasturi Tilak on the forehead of the Lord. It was during November 1988, when consulted by TTD for the supply of Kasturi for the temple use, the Forest Department of Himachal Pradesh at Shimla informed that certain quantity of Musk is available with them which is extracted from the animals that are reared in their Musk Deer Farm at 'Kufri' and they requested TTD to send a responsible officer to take delivery of the same.

I was instructed by my Conservator of Forests to proceed to Shimla and take delivery of the Musk from the Forest Department of Himachal Pradesh. Accordingly, I proceeded to Shimla. First, I reached Delhi Railway station and thence proceeded to Kalka. From Kalka I proceeded by train to Shimla. The Kalka-Shimla railway is a 2 ft 6 in narrow-gauge line which traverses a mostly mountainous route from Kalka to Shimla. It is known for dramatic views of the hills and surrounding villages. The railway was built under the direction of Herbert Septimius Harington between 1898 and 1903 to connect Shimla which was the summer capital of India during the British Raj.

After reaching Shimla, I proceeded to the office of the Prl. Chief Conservator of Forests and contacted the concerned Conservator of Forests

who advised me to go and have a look at the Musk Deer breeding Farm located at Kufri, the next day and other places. Next day he arranged a vehicle for transport and sent a Range Officer to guide me and I proceeded to Kufri which is about 15 km from Shimla. I visited the Musk Deer Farm where the Musk deer were reared and had a glimpse of these rare animals which we cannot see in our areas.

On return from Kufri, I contacted the Conservator of Forests and took delivery of the Musk. The rate fixed for the sale of Musk was the prevailing rate of gold as on that day. The rate was calculated roughly by the TTD and I was provided with the necessary amount at Tirupati before undertaking my journey for purchase of the Musk at Shimla. I paid the amount and I was handed over the Musk along with the necessary receipts and the 'Transport permit'. I bade goodbye to the Conservator of Forests and started my return journey and reached Tirupati. I kept the packet containing the Musk in my suitcase and my suitcase was smelling with the perfume of Musk for about a month even after removing the packet.

Like this I had a rare opportunity of serving the Lord and also having personally a glimpse of this rare animal. (Source Internet)

(Editor's note: In Urdu Musk is known as Mushq and in Urdu there is famous old saying "Ishq Aur Mushq Chupaye Nahi Chupte, meaning love and Musk cannot be concealed. The author is a retired Dy. Conservator of Forest, from A.P. He has contributed many articles for Vana Premi. He can be reached by phone no. 8019722292 and e-mail i.d. vssbabu@gmail.com)

"No one in the world needs a Rhino horn but a Rhino." **-Paul Oxtan**

Wildlife and the Relevance of Forensic Science

By
V.V. Hariprasad

Forensic science owes its origin to the individuals who developed the principles and techniques needed to identify or compare physical evidence and second to those who recognized the need to merge these principles into a coherent discipline that could be practically applied to a criminal justice system. Forensics, originating from the Latin word **forensis** that means “**in open court**”, encompasses numerous disciplines – art, commerce, psychology, and science – that can be used to investigate a criminal matter. Forensic science governs any and all sciences that can be applied to such investigations to examine evidences, create linkages, and to reveal yet unknown information.

❖ **Mathieu Orfila of Spain (1787-1853)** is considered father of forensic toxicology. In 1814 he published the first scientific treatise on detection of poisons and their effect on animals. This treatise established forensic toxicology as a legitimate scientific endeavour.

❖ **Francis Galton (1822-1911)** undertook the first definitive study of finger prints and developed a methodology of classifying them for filing. His early efforts have earned him the distinction of being known as the father of criminal identification

❖ **Leone Lattes (1887-1954)** a professor at the institute of forensic medicine at the university of Turin in Italy devised a simple procedure for determining the blood group of a dried blood stain in the year 1915 which is applied to the criminal investigation where as in 1901 **Dr Karl Landsteiner** discovered that blood can be grouped into different categories.

The application of science and technology to

the detection and investigation of crime and administration of justice is not new to India. Although our ancestors did not know forensic science in its present form scientific methods in one way or the other seem to have been followed in the investigation of crime. Its detailed reference is found in **Kautilya's Arthasastra** which was written 2300 years ago. The discipline of crime scene investigation was developed mostly in the second half of the 19th century.

WILDLIFE CRIME: Wildlife crime is the great equalizer of the 21st century – it has threatened biodiversity, economies, lives and livelihoods, in equal measure in both developing and developed nations of the world. It has changed facets and scale in a manner befitting a rapidly digitized world that has witnessed the blurring of personal and materialistic boundaries. Wildlife crime has reached far beyond feeding the nutritional and ritualistic needs of communities living near forest areas, and has assumed the role of feeding the gargantuan greed and decadent lifestyles of consumers across the remotest parts of the globe. Forensic scientists play a crucial role in wildlife crime investigation

wildlife crime has now been pegged as the fourth largest organized crime in the world. It has been revealed to have impermeable supply chain management systems that can put many a multinational business to shame. Several studies report that the proceeds from wildlife crime finance other organized crimes like arms dealing, creating one of the most detrimental vicious cycles

While wildlife crime grows exponentially, enforcement agencies around the world are left breathless trying to wage a war against it.

Effective investigation of wildlife crime continues to pose an insurmountable hurdle for all nations of the world. Judges and lawyers dealing with wildlife cases continue to grapple with shallow understanding of wildlife crime, the evidences against it, and the laws applicable to it.

Customers sitting in far off destinations like Russia, China, and Japan have little regard for how their demand for exotic plants and animals, and their parts, be it to treat the body, the senses, or a misplaced sense of prosperity, is destroying natural heritage and threatening the national security of nations that serve as source and transit routes for international wildlife trade. The individuals, communities, and mafia involved in procurement and trade in wildlife have little fear of any possible legal ramifications, which have become a mere urban legend. The few criminals that do get caught and prosecuted are, at best, let off with a heavy slap on the wrist. The majority of them are so low down in the chain that it has no effect on the burgeoning trade.

Several nations have implemented stricter laws, put in place entire trade bans, and signed treaties with neighbouring nations as well as international organizations such as Interpol in an effort to combat the demon of wildlife crime. The corporate world has emerged as an ally with many a pledge of time, intellect, and money to this battle. These collective efforts have, thus far, only succeeded in bringing to flickering light the fact that wildlife crime is a serious threat and that traditional crime fighting tools are crippled against it.

There does, however, exist a light at the end of this seemingly bleak tunnel. Scientists working in forensics laboratories are donning their white coats, purple gloves, and using state-of-the-art tools to join the global fight against wildlife crime.

Forensic science has in the recent history helped nab many blue- and white-collar criminals through the creative application of scientific principles and development of new scientific methodologies. Today, forensic scientists are putting their expertise to use in the investigation of wildlife crime – be it hunting or poaching, illegal transportation, or trade, and illicit use or consumption of protected wildlife and their derivatives. Investigators are often handicapped by the inability to accurately identify the species of origin for the wildlife articles they seize from criminals

Products made from protected wildlife, such as these nautilus shell ornaments, are illegally traded across physical and online markets. Forensic scientists have developed tools to analyse a variety of wild animal parts. Animal parts can provide a host of information when forensically analysed. Forensic analysis is highly dependent on the quality of evidence collected.

Forensic scientists around the world are guided by a golden rule, namely **Lockard's Exchange Principle**, which holds that '**every contact leaves a trace**'. In other words, the perpetrator of a crime will bring a sign or trace of himself into the crime scene and leave with something from it, and such traces can be used as evidence. Items of evidence collected by authorized officers from wildlife crime scenes and contraband intercepted by agencies such as Customs are entrusted to the hands of forensic scientists to scrutinize them for traces of human activity and protected animal parts. Such detailed analysis has the potential to provide a large body of proof "beyond reasonable doubt" that courts across the world rely on to arrive at decisions on criminal matters.

Enforcement agencies can effectively implement wildlife law only when they are able to identify

wildlife and their derivatives down to the species level. In addition, the reliable identification of wildlife criminals is of paramount importance but poses a constant challenge, given the complex nature of wildlife crime itself. So far, evidence on these matters has been largely garnered through wildlife expert testimony and eyewitness testimony, respectively. Both of these have failed to be admitted as sufficient proof by courts on several occasions. As a result, enforcement agencies now increasingly turn to forensic scientists to provide reliable proof for the identification of wildlife contraband and wildlife criminals.

Unless already ascertained by a trained wildlife investigator, forensic scientists may be required to begin their examination by looking for tell-tale signs to confirm whether a particular wildlife article is genuine or fake – a problem frequently encountered in illegal wildlife trade. The unique pattern of crossing lines in genuine elephant ivory (known as the **Schreger Pattern**), the characteristic shape of a leopard's canines, or the characteristic contouring patterns of tiger stripes are common examples of morphological evidence that aid forensic scientists in this decision making. If these do not lead them anywhere, or the evidences are not in a form that allows such identification, forensic scientists have at their disposal a whole other arsenal of tools.

Forensic DNA (**Deoxyribonucleic Acid (DNA) = En Español. DNA is the chemical name for the molecule that carries genetic instructions in all living things.**) typing allows scientists to exploit unique genetic sequences in DNA to identify which wild animal or plant species a particular product came from, or to link small amounts of biological evidences such as sweat, hair, or saliva to the individual criminal that left

them at the crime scene. Forensic trichology enables scientists to examine the unique structures of animal hair at microscopic level to identify which species a confiscated skin or fur belongs to. This is critical when DNA evidence in such wildlife artefacts cannot be harnessed due to the effects of chemical processing. Traces of physical evidence such as glass, fibres, paint, etc. left by criminals at crime scenes are also exploited by forensic scientists to link suspects to the scene and the crime in question.

When parts of an animal that is suspected to have been poisoned are subjected to forensic toxicological techniques, scientists are able to identify the nature and quantity of the poison administered. Such information enables officers to specifically look for and retrieve further evidence such as poison bottles and poison-stained clothes from suspects. When articles from butcher shops and restaurants suspected of selling wild animal meat are sent to forensic scientists, techniques of forensic serology help them identify the species being processed and/or served. When culprits are yet unknown, forensic scientists can extract serological evidence from items such as cigarette butts and clothing left at crime scenes. This provides corroborative leads required by investigators to sift through large groups of people to identify possible suspects. Similarly, forensic analysis of impression evidences such as footwear impressions and tyre tread marks can be used by scientists to generate investigative leads that help narrow down searches for suspects.

Forensic analysis can help establish or rule out human involvement in suspected cases of animal death. Forensic fingerprint analysis when applied to wildlife crime scenes allows scientists to prove that a suspect handled the gun, the knife, the trap, the vehicle, or any object

suspected to have been used in the commission of the offence in question. Forensic scientists can today retrieve fingerprints even from egg shells, ivory and feathers; enabling investigators to directly link criminals to these wild animal parts. In cases of hunting, forensic ballistic analysis of firearms and gunshot residue recovered from the person of the suspect, as well as of the bullets recovered from the dead animal, allows scientists to link the suspect to the crime scene and to prove his criminal activity. Even older forensic techniques, such as handwriting and document analysis, are finding a place in wildlife crime investigation, especially given the large volume of falsified import-export documents that allow illegal international trade of wildlife to carry on unabated.

It is believed that evidence never lies. The forensic scientist of today has many a technique tucked up his lab coat sleeve to make evidences from wildlife crimes 'talk'. However, forensic science at work for wildlife crime investigation is not always a cake walk

Most of the nations do not yet have the legal sanction to create databases for human-related personal information, such as DNA and fingerprints, which are required to statistically validate findings from forensics analyses. The few databases that exist in nations such as India can be used to enforce cases of cross-border wildlife trade, but coordination between nations is lacking on this front. This hinders the seamless linking of criminals to the truly worldwide web of wildlife crime. On the bright side, with open source wildlife DNA databases, such as those put together by scientists at the International Barcode for Life Project (IBOL), the reliability of DNA sequencing of wildlife evidence has increased considerably. However, exhaustive databases for other wildlife articles such as hair, fur, bones, feathers, etc. are scarce.

It is essential that forensic applications be used to the fullest extent possible to combat illegal trade in wildlife, as is emphasized in a number of **CITES (The Convention on International Trade in Endangered Species)** Resolutions and Decisions. In tackling illegal trade in wildlife, investigative questions may relate to both the identification of perpetrators involved, and the identification of the wildlife specimens found. The former is the subject of traditional forensic analyses, such as human DNA profiling or ballistics, while the latter is the subject of wildlife forensics. Although these categorizations are not entirely fixed within the forensic community, they are generally considered as the best rule of thumb. In the case of CITES implementation and enforcement, the investigative questions to address in relation to the identification of animals and plants, or their parts and derivatives, can generally be categorized into five groups, concerning:

- ◆ the species involved;
- ◆ the geographic origin of a specimen;
- ◆ the wild or captive/cultivated source of a specimen;
- ◆ the individual origin of a specimen;
- ◆ the age of a specimen.

Within these five categories of investigative questions, there are a wide range of specific enforcement needs, some of which can be addressed using generic wildlife forensic methods, others that require a much more specialist approach.

SOURCE: Central university. Hyderabad, library and Internet)

(The author is a retired Deputy conservator of forests and a practicing Advocate, a P.G. diploma holder in Criminal justice and Forensic Science from Central University of Hyderabad).

A TECHNIQUE OF CAPTURING A WILD ELEPHANT CALF

By Triggering Communication Between The Wild and Decoy Elephants

By Dr. K. Tulasi Rao

It was a cool winter morning. As usual, completed my first round of routine inspection of animal day and night dens of the Zoo. I was busy in my old dilapidated gazebo office, preparing 'Daily Report' of the health and hygienic conditions of the captive wild animals and their surroundings. It was about 10.30 A.M, heard, through half opened window, a commanding yet subtle and familiar tone of voice in Telugu in Tamil accent. It was Mr. Rangarajan, the Conservator of Forests (C.F), Visakhapatnam, enquiring me, while disembarking from his nicely kept-up old blue ambassador car and seen rushing towards gazebo, while I went ahead and received him. He was in hurriedness and appeared to be in hustle to convey an urgent telephonic message from Sri Pushp Kumar, the Chief Wildlife Warden (CWLW), A.P. The task was to safe capture of a wandering teeter-trotter elephant calf that was strayed away from its group.

Mr. Pushp Kumar, one of the few renowned wild lifers of India then, was very clear in his instructions and directed Sri Rangarajan to coordinate the entire rescue operation under the technical guidance of Sri Tulasi Rao, who was then working as Assistant Curator, Vizag Zoo. It was in this milieu, he said, that he had come to the zoo to reserve and seek out my services for this special operation.

Though I was trained in darting of wild animals, it was understood through the discussions that Mr. Pushp Kumar was not in favor of chemical capture as the animal moving helter-skelter and the necessary logistics and equipment for handling this operation was not readily available.

He was of strong opinion, that there was every chance of the animal get killed, due to improper handling and naive administering of exact dosage then in the open fields. Capturing a traumatic and a confused wild animal, moving helter-skelter in open areas, is not an easy job to handle, especially in absence of tranquilizing equipment, as this operation involves an element of risk either to the animal or humans or both.

Though I was a bit apprehensive to handle the operation by physical means but there was no other option but to design the operation fit to the ground realities. My subconscious mind started working fast and making inventory of sequences to act upon. As a first step we decided to go to the setting where the strayed animal was moving. While on drive itself, series of instructions transmitted through wireless by the Conservator to the Divisional Forest Officers Srikakulam and Vizianagaram for the logistics support made available as per the inventory list. Immediately a team of frontline forest officers were made to rush to the spot to find out the movements and inform its direction of movement. One of the team sighted calf near the village pond. At around 1.30 P.M, we reached the place where the animal enjoying browsing the crop In the fields.

Migration of elephants to Andhra Pradesh from Orissa and Tamilnadu has been common, though these elephants do not stay permanently at one place. Mahendra Giri mountainous forest range of Orissa shares the border corridor with the forests of Srikakulam Districts of Andhra Pradesh, and frequented by wild

elephant herds which damage the paddy fields frequently and has become a subject of severe man-animal conflict. Elephants have a very strong social structure and travel in herds led by matriarchs and composed of females and youngsters. Usually the farmers do drive them away to protect their crops. It might have been in one such operation that a wild male elephant calf got separated from the herd and was observed wandering in the village crop fields of Vizianagaram and Srikakulam Districts. It was first sighted on 11.12.87 but later the calf could not be traced. Subsequently, it was sighted at Jannavalsa village limits near a water pond rimmed with palmyra thicket that provide a good hideout for the animal.

The strategy struck to me first, was, to restrain the moving wild calf elephant for considerable time, nearer to the water tank, to gain time and get ready for the capture operation. Elephants do frequent the water courses for drinking and showering if available. There is every chance for this to visit the pond quite a good number of times for dousing and could be an ideal site for execution of **"Operation Gajanana"**. The services of zoo vet at this juncture was crucial for making the calf immobile and keep the animal to remain in the operational site identified, by keeping it on sedation or shoving the animal with baits if it tries move away. Taking location advantage of the Palmyra tree-grove and the shrubs the area was thick fenced with the bamboos and cut shrubs and nicely camouflaged so that the calf would not sneak through the gaps during the operation.

Necessary urgent arrangements were made to prepare jaggery boluses and banana baits inserted with Chloral hydrate 100 grams, and placed them along the beaten path to the water tank. It has been a safe practice in captivity, to keep the elephants sedated partially and be calmed under the supervision of a trained vet.

It was about 3.15 p.m. in the afternoon, calf moved towards water tank, enroute devouring boluses as expected. Within 20 minutes the calf appeared quiet and was not inclined to move away; it was sedated.

After a precise parley with Kanakaraju- the mahout accompanying us, it was meticulously designed to capture the calf by *'psycho-physical'* means with a decoy. Conveyed our strategy to CWLW by wireless through the curator positioned at zoo, for coordination. Telephonic permission was accorded to shift "Shanti" - a tamed cow elephant of the zoo as a gizmo of the operation. Then we moved back to the zoo to transport Shanthi to the site of operation

Transportation of Shanthi from Visakhapatnam was an "operation" by itself. When the animal was shoved by the mahout to board into the open back transport lorry; it resisted incessantly to get into it, as quivered Shanthi became weird due to sudden warping and cracking sounds of wooden planks caused by its weight. Kicking with his legs on its jab sensitive areas behind the ears; around the anus and on its trunk infuriating the animal and was ready to charge the mahout out of panicky. Since it had a history of going astray and stampeding, I had to warn him to retreat from the force loading.

It was felt risky taking Shanthi on foot as we had a bitter experience earlier. One day it knocked over the mahout and killed a passerby while on the way, when taken for fetching fodder from nearby Dairy-farm and fled into the Simhachalam hills through Kambalakonda forests. It had become a terrible task to recapture and a story to be told. Since then it was chained to reduce its fast and swift movements. Later, never dared to take it out without chaining, though it was unsympathetic. It was hard to take a decision to shift the animal on foot over 40 kms without an element of risk on a heavy traffic highway. There was no option but to make it, as the time was

running out. It needs extra caution and a careful design of trek.

Journey started at 8 p.m. in the moonlit night. A lorry at 5 km/hour speed loaded with palatable grass and two drum full of water was kept moving in front of the Shanthi with an escorted jeep ahead to stop the traffic till the caravan moves and the other at the rear to keep away from threatening highway traffic noises. We had to stop frequently on the way to spray water on the body and limbs in order to bring down the body heat of the animal that was being generated during the journey. Reached the destination at 6 'O clock next day morning after marching for 10 hours overnight. Now Shanthi was loosely tied with a long chain and made stress-free by profuse watering, scrubbing and bathing followed by well-fed with jaggary mixed ragi boluses. Shanthi was kept happy, fodder and sugarcane were made available plenty. People from nearby villages started thronging the site to witness the operation and within no time swollen to a big crowd and became uncontrollable. Though the police were informed to be present during the operation but they were late to report. Meanwhile the mob was convinced to become the part of the operation by forming into three circles – inner, middle and outer circles led by section and beat officers. The job assigned them was to drive back the animal into core circle, should it try to escape. Thus, the mob was restricted to a safe distance from the operation.

Operation Gajanana: Initially it was attempted to move Shanthi nearer to the wild one. The Command in Tamil from the Mahout on board obeyed by Shanthi, and was approaching the wild slowly. On seeing a huge unfamiliar member, the calf ran away. Fortunately, people organized in the circles driven it back into the core circle. Now we changed our strategy and kept Shanthi be at a standstill pose and trigger communication between them. Then Shanthi was called back and tethered with a long chain to a

nearby tree. The wild calf was standing about 100 feet away from the cow elephant but did not appear to be frightened. As instructed by the mahout, Shanthi made “inviting-calls” to the wild calf, by raising her trunk, trumpeting, opening her mouth, moving her head sideways and up and down and flapping her ears. The calf immediately responded the call, the way Shanthi did. We were excited with ecstasy and confident of success. Absolutely no bounds for joy

In about thirty minutes, the calf was seen moving towards Shanthi, with slow wobbling strides. Encouraged by Shanthi, the calf moved as near as five feet and turned on its back towards Shanthi; lifted its trunk and kept both the hind limbs apart. Shanthi started sniffing the anal end of the calf. While doing so, she made low grunting sounds. This “fondling behavior might have induced the calf to urinate. Shanthi repeatedly exhibited this behavior, but when she shoved the calf on its front, it retreated to a distance of 15 feet.

The wild calf, maybe due to fear or weariness, assumed a crouching position, with the head and the tail kept lowered, expressing its submissiveness. It moved sideways, reached the cow elephant which started smelling it. After some time, the calf went to the pond, drank water, sprayed water on its head and the forelimbs, the calf began approaching the cow elephant from behind, touching it off and on, expressing its loyalty, urge for love-caring and assurance.

Shanthi was very calm pretending busy eating grass, while the calf exhibited repeated looming and promethean behavior. Excited Shanthi, while generous in building confidence, extended its maternal caressing and fondling love which fostered confidence. Responding to the **succoring behavior** (i.e. the act of seeking out affectionate care and social support to a distressed one) of the calf, Shanthi was immensely complaisant by allowing it to suckle the teat and hugged under its chest and belly. Quite

often Shanthi was sniffing the urine and touching the genitals of the Calf. While Shanthi was holding the grass with its trunk, calf started nibbling. For another half-an-hour, the calf was moving around Shanthi, sometimes underneath its belly, in between the trunk and forelimbs, touching and rubbing it frequently.

After two hours, nosing the wild elephant calf was attempted with the experienced mahout sitting on the cow elephant and trying to put the rope around the neck of the calf. Before the knot could be tightened, the calf escaped six times. During the next attempt when the noose was around the neck, and under intimation to Shanthi, stealthily sneak under its belly pulled down the knot and tightened it manually while the other long end was tied to a tree nearby. On knowing trapped, the calf ran fast with rope tied, in to the pond and totally submerged under water which jittered us momentarily. Then it slowly raised to its nostrils and still the trunk and body was submerged nearly seven (7) minutes under the water. Finally, it could respond to the repeated tempting and welcoming calls by the Shanti. The other end of the rope loosened and held firmly by the Shanthi and five others even as it was tied to the tree trunk. Then towed the calf slowly in its direction by pulling the rope with its mouth. The wild elephant calf was thus caught and tied up loosely to Shanthi on her left side.

The attachment developed between Shanthi and the calf was so strong and did not find any difficulty to shift them both to Visakhapatnam in the early hours of day-3. Repeated the same process of retreat as was done on the first day, with extra care and exceptional precautions.

Acknowledgements: The author is indebted to late Sri Pushp Kumar, the then Prl. C.C.F for having reposed trust and confidence in me to handle the challenging task. Also, very much indebted to Sri R. V. Rangarajan IFS(Rtd), formerly Addl. Prl. C.C.F., for efficient coordination and extending great support during and after the operation. My thanks are also due to late Sri T. V. Padmanabham, D. F.O. Wildlife Management, late Sri late A. Upender Rao DFO (T) of Vizianagaram District and their Staff for their support and logistics without which this Operation *Gajanana* would not have been a success.

My sincere thanks to my colleague, batchmate Sri Vedantham Hariprasad Dy. Conservator of Forests (Rtd.) for his constant reminders me to draft this article.

(The author is a retired, Dy. Conservator of Forests and Director, Global Biodiversity Solutions. His mobile no. is 918500782528)

"The only good cage is an empty cage."

Lawrence Anthony, The Elephant Whisperer

Answers for October Quiz.

1. c	6. Indian Board for Wildlife	11. c	16. a
2. Bear Grylls	7. a	12. Indira Gandhi	17. Abraham Accord
3. Elephant/Giraffe	8. b	13. a	18. b
4. b	9. c	14. d	19. c
5. d	10. b	15. Shanghai Cooperation Organisation	

BASICS OF WILDLIFE MANAGEMENT

**By
B M T Rajeev**

Wildlife management is an art of conservation and control of wildlife in accordance with the principles of wildlife management widely accepted, generalization based on abundant and diverse research and experience and having wide application for managing wildlife. It involves habitat manipulation- to favor or inhibit target species (indirect management of population) and direct wildlife population management- controlled harvest of wildlife.

Whereas Wildlife conservation is a dynamic social process that defines and seeks to attain wise use of wildlife resources, while maintaining productivities of wildlife habitats. This process is strongly influenced by practices and attitudes of the past. It includes the professional activities of management, education, administration and law enforcement.

Whereas the wildlife management is an art of making land produce a valuable population of wildlife, (James A. Bailey, 1984.et.al.)

Wildlife management is an art of conservation and management of wildlife to achieve the objectives of ecological succession of an ecosystem to preserve the biological diversity for science, education and enjoyment of the future generation as a national heritage for posterity as per the Indian concept.

Basics/ principles of wildlife management are the concepts to be considered in formulating management objectives and in reaching management decisions. Basics do not tell the manager what to do; but they are the concepts to be taken into consideration while deciding what should be done. Application of these basics to wildlife management requires knowledge of biology of the flora and fauna and an ability to think analytically.

Wildlife management depends upon a philosophy of *resources conservation and protection of wild animals.*

Goals of wildlife management, is determined by political process with the prediction of wildlife response for the management and its values. The perception of the people in wildlife is also very important in its management.

Wildlife management involves control over the distribution, abundance and quality of wildlife. To manage wildlife, one should have the knowledge over the basics of wildlife management on where the species or subspecies evolved, what its naturally associated environment is, what selective forces have shaped its adaptation etc.

To understand the principles of wildlife conservation and its management require the knowledge and understanding of many visible and invisible attributes and values of the wild animals, their habitat-ecosystems, weather and climate and soils; water, foods, and nutrition, cover requirements of wildlife; movements, behaviours, breeding-reproduction, mortality and physiology of wildlife; ecological successions, and carrying capacity of the habitat in addition to the knowledge on the society cohabiting the wildlife etc.

The attributes of basics/principles of wildlife management are more complex and are interlinked between each other and it is very essential to have the minimum basic knowledge over them to be called as a wildlife manager or a wild lifer from the foot soldiers to the managers as each one is a manager for his jurisdiction over wildlife habitat.

Let us examine the principles/basics/fundamentals of wildlife management for information of the readers.

1. Wildlife values: Wildlife has several values - commercial, recreational, biological, scientific, social, aesthetic, environmental and negative. These values need no elaboration as they are talked or heard or learnt as benefits/advantages/significance of wildlife. All wild lifers should be very vocal to speak about the wildlife values on behalf of them.

2. wildlife-Habitat's Ecosystem: Habitat-ecosystem is a natural unit of all plants, animals and micro-organisms in an area functioning together with all the non-living physical factors of the environment. Each area has a variety of ecosystems. These have their own distinctive interlinked species of plants and animals. Each of them varies functionally and structurally from other systems. Awareness of the *zoogeographic history of a wildlife species* can enhance the understanding of its ecological adaptations and limitations, its requirements for habitat resources and its abilities to withstand competition in various environments.

Wildlife Managers need to have knowledge over the different ecosystems of the Protected Areas (PAs) habitats and initiate action to enumerate all ecosystems and maintain them without allowing for regression or to disappear. eg: Allowing a swamp to dry up permanently or to be invaded by weeds is a loss of such an ecosystem for a set of animals that are adapted for it.

3. Weather, Climate and Wildlife: Weather is the condition of the atmosphere at a particular place and during a relatively *short period* of time as regards to heat, cloudiness, dryness, sunshine, wind and rain.

In contrast, climate refers to the weather conditions experienced at a place or region over a *long period of time* - decades or even centuries.

Weather is a variable factor capable of causing huge effects on wildlife and habitats.

Climate and weather conditions of the region dictate the terms to the wildlife managers to plan and implement programmes to contain fires in summers, ensure water sources sustain in the pinch period and also to arrange for supply food in severe droughts to some animals that do not migrate etc. The scenario of global warming and its ill effects of rise in atmospheric temperature have all problems in store against wildlife habitats and the animals.

4. Water, Food and Nutrition Requirements of Wildlife: Water and food are very important requirements to all wildlife but nutrition is also important since it affects the vigour, health, birth and mortality rates of the animals.

These are generally affected based on the climate and weather conditions and also the biotic factors affecting the wildlife habitats.

Water: Generally, more care is taken to provide water facilities to the animals around the year. The water should be available within the cruising distance of a maximum 2 km for the animals; there should be a perennial water source in the middle of any habitat- it may be natural or artificial to cater to the needs of wild animals during pinch periods.

eg: It is better to have a reservoir in the centre of the PAs to store more water in deep valleys with lesser water spread area as an Oasis where there are no perennial rivers in addition to creation of more water holes in arid zones.

Food-fodder is the food for herbivores, which was and is abundant in most of the PAs in India in the form of grasses, herbs, shrubs, climbers and trees. It is being assured by controlling cattle grazing, fires but...no efforts are made to control invasive weeds which are affecting the fodder base of the herbivores in some of PAs and forests in India.

eg: *Lantana* and *Parthenium* and *Eupatorium* weeds in Bandipur Tiger Reserve (TR), Nagarahole TR and BR Hills TR in Karnataka have very badly affected the fodder resources of the PAs. Plans would have existed to check such invasive weeds from the beginning of the PAs in the 1970s; but the plans are afoot after the situation has gone out of control in the above TRs (2020). For eg. The Kakadu NP in Darwin of Australia had a project to control the weed- *Touch me not-Mimosa pudica* with uprootal (as seen in 1994).

Food- Prey animals are the food for Predators..... there is no such visible problem so-far in India to indicate that predators are suffering without prey animals except to some extent in the Gir WLS... which is met by allowing cattle inside the PA for preying on by lions during droughts.

Nutrition- The herbivores meet their mineral requirements by licking soils with minerals /salts in nature. The wildlife managers supplement minerals through tying mineral salts blocks for licking and common salt to salt licks for licking by herbivores in the wildlife habitats of high-density concentration. Predators need no nutritional supplements.

5. Cover Requirements of Wildlife: Cover is defined as a shield or protection to conceal, defending from danger or bad weather etc or a place of refuge provided especially for the homeless. Cover is as important as food and nutrition to wildlife to enhance its chances of reproduction and / or for survival. Cover requirement differs from animals to animal as it depends on the biological adaptations of the individual spp from time immemorial to suit its behaviours.

Measures to create bushy growth in the middle of a vast meadow or a grassy blanks or deserts for hiding (escape); and openings in the middle of the vast track of thick vegetation for basking or foraging or visual communication of small herbivores or for hunting by

predators etc; and control against biotic pressures should be the remedy to stall degradation of the existing cover-shelter facilities and for improvement of the cover in wildlife habitats.

6. Soils of Wildlife Ecosystems: Soil is the uppermost weathered layer of the earth's crust- Soils support a rich flora and fauna depending on the physiographic climatic conditions and fertility. Floral composition changes with the type of soils. *It is a proven and generalized fact that the animal quality i.e. size, vigour, reproduction, disease resistance, fur quality, antler size, mortality rate and other characteristics of wildlife is directly related to the soil fertility which is the basis for the quality vegetation-food resources of the habitat.* Within suitable habitats, wild animals achieve higher quality and productivity on the more fertile soils than on infertile soils.

The wildlife managers have a role to protect the soils without allowing for degradation of existing vegetation due to cattle grazing, fires and illicit felling; and also to stop soil erosions if any through SMC(soil and moisture conservation) measures and to supplement vegetative regenerations if found necessary to ensure health, wealth and richness of the flora and fauna.

7. Wildlife Behaviour and Physiology: The behaviour of an animal is the response to stimuli- a specific functional reaction in an organism which may be internal or and external. The *internal factors* may be biological, such as breeding, mating, parental care, ecstasy etc. There may be a number of *external factors* which cause development of a specific behaviour in animals. Some of the external factors may include climate-Tsunami, cyclones, disturbance like fire, biotic interference and threat to life- hunting. Only a few behaviours of wild animals can be understood by the human being while a large number of such behaviours remain unknown.

Different wild animals belonging to different species share the same habitat. *They act, react and express their fear, competition, companionship, courtship, aggression, and tolerance to others' behaviours.*

It is useful for wildlife management to detect trends in ecological density of wildlife population and its behavioural trends and physiological parameters associated with sex-age classes with seasonal trends in physiology and reproduction.

Since animal behaviours and physiology respond to changes in ecological density, wildlife managers have to observe the trends in behavioural or physiological parameters as indicators of ecological deficiencies to initiate measures to resolve the peculiar behaviours, if any, on account of shortage in food or water or shelter or threat to their life...etc. and initiate appropriate measures to mitigate the causes responsible for the change in the behaviour of the animals. eg. Migration of animals for food or for water or shelter etc...

8. Wildlife Breeding / Reproduction: Wildlife breeding is the process of developing or propagating wildlife. Reproduction is the rate at which a wildlife population increases. This is a very important parameter to assess the trend of success of the wildlife management (WM) of an area since the objective is to conserve a set of species of wildlife.

The trend in breeding/reproduction in species of wildlife in India is generally assessed basing on the population trend through census of the flagship species of the Projects like-tiger, lion, leopards, rhinoceros and elephants and rest of the species of animals as prey or co-predators The methods of census which were visual counting, sample counting, indices counting etc have gone more scientific and technical with the use of modern camera gadgets-for camera traps; even unnoticed species of animals are being explored in the field by putting all the drawbacks

of the manual modes of censuses to oblivion.

9. Movement and Migration of Wildlife: **Movement is the act or an instance of animals moving or being moved.**

Migration is the move from one place to another or changes of its area of habitation by an animal or bird or fish or reptiles with reasons. Animals travel over the landscapes to fulfill their habitat needs and to ensure the gene flow. Animals migrate over a long distance or to adjoining habitats seasonally for water and food during droughts and prolonged pinch periods eg. Elephants, bison and many small animals migrate to habitats that can fulfill their needs. Birds migrate for a long distance to the predetermined favorable grounds for breeding and for wintering depending upon weather and other conditions of their habitats of origin.

Wildlife managers have a big role in creating favorable conditions for animals and birds to prevent migration of animals out of their jurisdiction; and also to facilitate wildlife to immigrate into their jurisdiction as a refuge for breeding or wintering-in case of birds and for water /food resources in case of animals during pinch periods; and to ensure safety for the lives of all such animals from the miscreants during immigration of animals. When animals congregate for water in big numbers as seen in Kabini backwaters in between the Bandipur TR and Nagarahole TR of Karnataka state.... Managers have to see that artificial foraging grounds in the vicinity are created and maintained to cater to fodder needs of the varieties of herbivores; so far, it has not been done... But it will be a problem in future with ever increasing numbers of the herbivores right from elephants, bison, sambar, chital etc. congregating in Kabini.

10. Wildlife Mortality: Mortality is the death or loss of life of a wild animal as a result of competition,

diseases, drought, floods, accidents or hunting or predation and aging. How reproduction of wildlife for sustainability of population in a community of ecosystem is important, in the same context, normal mortality- the state of being subjected to death is also important on the point of view of maintaining the balance in nature and also the health and vitality of the species and also, for the health and wealth of the ecosystem. Mortality of animals needs a special attention of the PA's management to redress the causes for such mortality with long drawn strategies.

The most dangerous factor afflicting the Indian wild animals is the mortality due to hunting or poaching of wild animals for meat, pelts and body parts for use and for trade in the international markets next to fatal diseases like-Rinderpest to bovines etc..... The hunting of wild animals as game- which took toll of wild animals in the beginning of the 20th century till enactment of the Indian Wildlife Protection Act, 1972 is a problem of the past; but, hunting of animals for use and trade is still persisting as a deterrent factor threatening the lives of the flagship spp like tigers, lions, leopards, elephants and rhinoceros; and also varieties of reptiles, small cats and dogs etc. The mortality due to MAC (Man-Animals Conflicts) is another problem that is causing sleepless nights to wild lifers in India. The news of poisoning, electrocution, noosing, planting explosives in food-laid, allowing trained dogs to hunt etc..... are new trends of causing mortality in wildlife by the miscreants being raged by the MAC. The wildlife management has a long way to put a check for these mortalities of the healthy wild animals to breathe safe in spite of elaborate arrangements made against poaching/ MAC with provision of high speed vehicles, roads, wireless communications, arms and ammunitions with anti-poaching camps/training to the staff and also dog squads and measures to

control depredation of animals with barriers and payment of compensations for losses.

11. Wildlife Ecology: Ecology is the study of organisms plants or animals in relation to their environment or their ecosystem- i.e. distribution of population, interaction between the species, effects of the physical environment and the energy flow through the system. Habitat resources - food, water and cover or shelter - its quality and quantity; reproductive success, mortality factors and movements - influenced by behavior physiology are all interrelated. Variation in any one factor will cause changes in other factors.

A deficiency in the supply of quality food can result in mortality due to malnutrition, disease or predation; can reduce reproductive success; can cause animals to abandon areas of insecure cover; can produce stress in animals and can influence competition and behaviors. These interactions form populations - habitat systems of great complexity. It is often difficult to detect which factors are most primary in determining population size and productivity. All of the above factors can respond to changes in ecological density. Thus, habitat change can alter many aspects of a population including its productivity.

The wildlife- a combination of diverse species of wild animals have diverse requirements in food, water, shelter and space requirements which can be met only by the diverse stages of the vegetation in a given habitat/ecosystem. To meet the diverse requirements of the diverse animals, manipulation of the habitats is a tool in wildlife management to have different stages of vegetation.

The wildlife manager must study the animals and their habitat for clues to habitat's deficiencies since the factors limiting the population growth are sometimes obscure and sometimes visible. The management should be always ready to initiate immediate measures to address the limiting factors

if any are noticed such as - water, food, cover and diseases.

12. Ecological Succession and wildlife: "Ecological succession" is the observed process of change in the species structure of an ecological community over a time. Within any community some species may become less abundant over some time interval, or they may even vanish from the ecosystem altogether. Similarly, over some time interval, other species within the community may become more abundant, or new species may even invade into the community from adjacent ecosystems. This observed change in flora or fauna over time in what is living in a particular ecosystem is "ecological succession".

Ecological succession is the progressive development of a biotic community, involving replacement of species and modification of the physical environment, until a community with a relatively stable species composition is reached- the terminal relatively stable community is termed as climax - characterized by climate, topography, soil and natural disturbance i.e. fire.

Ecological succession needs to be observed with annual documentation of the changes that take place in the composition and quality of the vegetation to develop strategies to interfere to maintain different stages of the ecological successions of the vegetation which ensure optimum benefits to the wildlife especially to the herbivores; generally the middle stages of the successions- This is one of the principle not attended in the management practices of Indian wildlife management. We are stuck with the objective wildlife management without interfering with the vegetation or with animals- ie leave the wildlife habitats inviolate to nature for conservation of the biodiversity in a limited area i.e. PAs for the benefit of science, education and enjoyment of the future generation as a national

heritage..... The root causes for the worst fires, depletion of the carrying capacity of the habitats, depredation of wild animals into human habitations causing MAC in the PAs of India.

13. Carrying Capacity of the Habitat: The carrying capacity is the ability of the habitat to support a number of animals, the quality and productivity of animals being defined according to management goals. If the management goals do not specify the quality of the animals or the condition of the habitat, the carrying capacity is simply the number of animals the habitat can sustain.

If we consider the management objectives of a National Park or Wildlife Sanctuary in India as cited above, it implies the management of PA's is to achieve the optimum ecological carrying capacity without subjecting for any wildlife- floral or faunal regulations. The mindset is-survival of the fittest... if the habitat resources falls- herbivores population will follow it- then, the predators have to fall in the population with starvation and then...the revival.

Knowledge on the carrying capacity of different habitats in a PA is very important to the managers to decide on the strategies to plan against the biotic pressures in the PAs and also to plan for the replenishment of the habitat to develop the food resources or to intervene and manipulate the habitat in climax stage to bring it down to the middle stages so that it can provide sufficient quality food resources to the animals and to plan for the reduction in the population of herbivores/predators through sports- harvest depending up on the policy of state.

14. Population Dynamics of wildlife: Wildlife population dynamics refers to variation in population size and also in sex-age compositions, reproduction and mortality rate and qualities of animals in a population of the given area. It is the study of how this variation results from variation among animals,

between animals and their environment. The population dynamics of wildlife is unknown to the Indian system of wildlife management. Whether the population of any species of animals in given a habitat is within its carrying capacity or more; if so to be translocated or otherwise... etc. has to be set in to the wildlife management since the objective of achieving certain density of the species of animals in any PA is yet to be decided and fixed.

15. People's perceptions on wildlife: The perceptions of the people, their elected political representatives/the ruling class plays a very important role in deciding about the conservation and management strategies for the wildlife. The people living very close to wildlife habitats have a major role in conservation of wildlife. They have to

live with them by sharing the land mass.... Some of the landed areas enjoyed by them earlier have been set aside/ being set aside for the wildlife. Unless they volunteer to give up their rights and cooperate with the authorities, it will be a difficult task to manage wildlife in the present complex situation of increased MACs. The wildlife management has to look into the problems of the people and address them to get their co-operation to have better wildlife conservation.

In India, the urban population is in favor of wildlife and the rural population who are living close to wildlife habitats is antagonistic due to MACs and a lot is to be worked to gain their favor.

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Birthday Greetings

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

S.No.	Name of the Member	D.O.B.	S.No.	Name of the Serving Officers	D.O.B.
Sarva Sri			Sarva Sri		
1.	A. Rasheed Khan	06-10-1937	1.	Smt. P. Rajeswari	21-10-1963
2.	T. Krishna Murthy	07-10-1926	2.	C.P. Vinod Kumar	21-10-1963
3.	L. Lohith Redduy	08-10-1931	3.	Lokesh Jaiswal	22-10-1963
4.	O. Subrahmanyam	08-10-1945	4.	Y. Madhusudan Reddy	04-11-1963
5.	U. Govind Rao	08-10-1953	5.	P. Krishnamachary	07-10-1964
6.	R.K. Rao	20-10-1935	6.	M. Ashok Kumar	13-10-1965
7.	V. Ranga Rao	20-10-1945	7.	R.D. Venkateshwarlu	13-10-1960
8.	N. Venkataramnarsaiah	20-10-1954	8.	D. Sudhakar Reddy	14-10-1966
9.	C. Subba Rao	24-10-1943	9.	Smt. G.A.P. Prasuna	21-10-1979
10.	B.M. Swamy Das	24-10-1954	10.	K. Appala Narasimha Chary	03-11-1961
11.	Dr.G. Narsaiah	24-10-1957			
12.	K. Murali Krishna Rao	29-10-1940			
13.	D. Nagabhushanam	05-11-1955			

INDIA'S BIG SEVEN

By
N. Shiva Kumar

The tiger is the totem for wildlife tourism in India as it brings in plenty of big bucks. In 2017-'18, the Ranthabho National park in Rajasthan had a revenue of Rs. 33.77 crore which is indeed impressive. Similarly, the tiger reserves in Madhya Pradesh – Bandhvgarh, Kanha and Pench – earned 400 percent more in tourism than what the State and Central Governments provide as their annual budget.

Akin to Africa's "big five" – the elephant, the lion, the rhinoceros, the leopard and the buffalo – India has the "big seven", or seven beasts that are sacrosanct in their respective wilderness, the vast vistas of grasslands and woodlands that nurture them.

Several of India's wildlife sanctuaries were once hunting grounds of erstwhile maharajas, and more than 50 of these have been designated as tiger reserves, collectively covering an area of 72,749 Sq. Km. An announcement was made on July 29, International Tiger Day, that the tiger population had risen to 2,967, according to the census conducted in 2018. Deaths however continued at about 200 a year. Does the tiger deserve so much attention? Is it hogging the limelight or is it silently helping the other wild denizens of the forest as the uppermost animal in the food pyramid? B.C. Choudhry, a wildlife veteran with 40 years of experience and a faculty member of the Wildlife Institute of India, says: "India's impressive wildlife extends beyond tigers as the diversity in our jungles is amazing. There are tiny frogs, turtles, spotted deer sloth bears, leopards, one-horned rhinoceroses and so on. Let us try to move on from 'tiger tourism' and appreciate our jungles as a complete entity."

Mohit Aggarwal, CEO of Asian Adventures, a 25-year-old ecotour company, and member of the

board of Asian Ecotourism Networks, sees a huge potential for "green ecotourism" in India. Mohit says: "The big cats are easily the attraction of most wildlife destinations in the world, and India is home to four of the five big cats: the tiger, the lion, the leopard and the snow leopard. Unfortunately, we have lost the cheetah, one of the active hunters of the grasslands.

"But we have the Big-7 of wildlife and this can catapult wildlife tourism into the next level. Wildlife tourism can boost India's foreign exchange earnings, and at the same time, provid conservation cover to India's range of flora and fauna."

INDIAN ELEPHANT: "Please slow down, there are elephants on the move", warned our guide as we trekked in Silent Valley. It is unbelievable how the behemoths, weighing up to 5,000 Kg, can move so silently, both as individuals and in herds. Equipped with soft but sturdy pads for walking, elephants are wanderers of wild places, constantly on the move and munching fodder. They eat 400 Kg of greenery a day to keep them going, dumping dung that fertilizes the forest floor and aids seed dispersal.

The foothills of the Himalayas, where the Ramganga meanders in the pristine jungles of the Corbett National Park, is also an ideal place for elephants. The Ramganga, forests and grasslands merge to create an idyllic location for elephants as they chomp on the choicest blades of grass or refresh themselves with dust and water baths.

India's much fragmented forests host more than half of the endangered Asian elephants in the wild. However, they are running out of space and time as the spread of human settlements is creating concrete jungles and squeezing elephant populations into diminishing compartments of woodlands. Those that

survive are forced into areas of human activity pass between fissured forests, and sometimes they feed on cultivated crops, which give rise to conflict. "The once harmonious relationship between elephants and people is breaking down. We need solutions to secure elephant corridors to minimize human-elephant conflict" says Dr. Sandeep Kumar Tiwari of Asian Elephant Specialist Group.

WILD WATER BUFFALO: My first encounter with the buffalo was in 1988 and it was merely a glimpse. But in October 2018, we lingered around the same national park on the second day of our safari and managed to see boisterous buffalos at dusk, crossing a large lake dotted with islands. The sun was above the skyline, with minutes to go for the sunset. The still water stirred as the big black buffalos generated silhouettes as they waded towards an island for a night of cud-chewing and slumber. Dr. Rahul Kaul of the Wildlife Trust of India (WTI) says: "There is much more to India's wildlife than flagship species such as the tiger or rhino. While conservation efforts dedicated to these animals do have trickle-down benefits to other species that share their habitat, certain species such as the wild buffalo require direct intervention for their very survival"

Once found in abundance across north-eastern and central India, the species is now restricted to north-eastern India and a handful can be found in Chhattisgarh. The population is around 4,000 individuals and constitutes the largest population in the Indian landscape, accounting for almost 92 per cent of the world population. The WTI has plans to shift the female buffalos from Assam after the monsoons to replenish the wild stock in Chhattisgarh.

INDIAN RHINOCEROS: The one-horned rhinoceros is the second heaviest of the rhino species in the world, next only to the white rhino of Africa, and weighs about 1,400 to 2,700 Kg. Standing six feet tall with a body length of almost 10 feet, it is enormous and resembles an armor-plated bulldozer. The rhino

is powerful and plump with prominent folds of thick skin. The horn of the rhino, typically 20-61cm long and weighing up to 3 Kg is its bane. The rhino is regularly hunted for the horn as it is thought to be an aphrodisiac. The one horn rhino is rated as a vulnerable species by the International Union for Conservation of Nature, IUCN

At the turn of the 20th century, its population is dropped to 200 individuals. The century old Kaziranga park was given the status of a World Heritage in 1985 for providing succor to the survival of endangered wildlife, particularly the one-horned rhino. Dr. Bibhab K. Talukdar, the Chair of the Asian Rhino Specialist Group of the IUCN Species Survival Commission and Asia Coordinator of the International Rhino Foundation (IRF), explains that the protection of the rhino was possible only by preserving its habitat and ecology and garnering the support of local villagers. There has been increase in rhino population from 600 in 1975 to 3,580 in 2019 because of better protection from poachers, surveillance against natural and man-made threats and proactive habitat management.

INDIAN BISON (GAUR): As the fourth-largest living land animal, the gaur, or Indian Bison is fighting a losing battle against ecological devastation. Standing over six feet tall and tipping the scales at about 1,000 Kg, it ranks only after the elephant and the rhinoceros in size. It is unique in many ways, having ridge instead of a hump along the spinal column. Its "wears" contrasting white stockings on all four legs, with a glistening ebony body to boot. Of all the wild cattle in the world, the gaur stands top on the list as the ultimate ungulate. Equipped with a physique, it resembles a trained athlete on steroids. But the muscled monster is fighting a losing battle and dwindling in numbers. India has 17 major cattle breeds that were domesticated thousands of years ago. Strangely, the gaur has never been domesticated. Some scientists reckon that taming

the gaur is tough because it is hunk of an animal fortified with strength and a short temper.

Dr. Asad Rahmani, former director of the Bombay Natural History Society (BNHS), who has 40 years of research experience in natural history, says: "The authorities in India have to wake up to the reality of the endangered status of the gaur. Even the Asian Wild Cattle Specialist Group (AWCSG), established in the early 1980s with the goal to conserve Asia's nine wild cattle species, is closely monitoring its status. Its numbers have increased in some protected areas. But the biggest threat today is the fear of epidemics like foot and mouth disease, rinderpest and anthrax. While poaching is prevalent, habitat degradation is a problem. Long-time studies are needed to provide authentic conservation methods for the India gaur.

LEOPARD: The supple feline is neither spotted nor dotted but wears rosettes and is a cornered cat despite the ability and agility to perform better than other big cats in the art of survival. Clever and cunning, widely distributed, leopards can flourish in areas where other large carnivores cannot. But poaching and reduction in prey have negatively impacted leopard statistics. Leopards are killed in large numbers across the country on a regular basis.

Not easily sighted, these big cats lead a stealthy and secretive life, away from prying eyes. They are flourishing in thin thickets of Jalana and the hollow hillocks of Jawai in Rajasthan and have become tourist attractions.

Having experienced both these destinations, I was heartened to see that human-animal conflict does not exist in these remote locations.

Vidya Athreya, an ecologist with Wildlife Conservation Society (WCS), has been working on human-leopard interactions for more than a decade. She used research findings to make informed decisions on policy documents relating to human-leopard conflict management. She is also member of the IUCN Cat

Specialist Group, and her work on the leopard in India has increased awareness of large carnivores outside protected areas. She says: "As an adaptable big cat, the leopard is able to reside and use human-use areas. Because of its greater adaptability, the conservation efforts required for the leopard are different from tigers. Leopard safaris in Jawai and Jalana have evoked interest in the secretive life of the leopards, which goes a long way in respecting the species."

ASIATIC LION: Although designated as a national park three highways, a railway line and smaller roads crisscross the Gir lion sanctuary in Gujarat. Temples within the sanctuary draw thousands of pilgrims each year, "trampling the tranquility" of the park. The habitat faces forest fire risk. Last year, the canine distemper virus caused two dozen deaths in the sanctuary, and this created panic among naturalists and wildlife enthusiasts worldwide.

It has been more than six years since the Supreme Court passed a judgment directing the authorities to guarantee a safe second home for the beleaguered Asiatic lion. The idea is to translocate a selected pride of lions to ensure the long-time survival of the endangered species. However, not much seems to have happened on the ground in spite of the huge sums that have been spent to create a second home at Kuno National Park in Madhya Pradesh.

Dr. Faiyas A. Khudsar, lead scientist at the Yamuna Biodiversity Park in Delhi who has worked for five years at Kuno, says; "The serpentine Kuno river sanctuary provides a thirst-quenching lifeline for flourishing flora and fauna on both its banks. Over the years, all the 24 villages located inside the sanctuary were relocated and rehabilitated outside the sanctuary for the introduction of the lions."

"A second home will provide protection against extinction for the free-ranging lions, which is an integral part of India's unique and diverse natural

heritage,” says Dr. Ravi Chellam, a senior wildlife ecologist who has studied the Asiatic lion for many years in the Gir forest.

TIGER: Tigers are deemed to dominate the jungles with their ferocious hunting skills, and yet the tiger is in deep trouble. From an estimated 40,000 animals in India a century ago, the number has come down to around 3,000 in 20018. In recent years, there has been a steady upward trend, but the fear of extinction in the wild lingers like a sword of Damocles. A World-Wide Fund for Nature and Wildlife Conservation Society (WWF-WCS) survey found that tigers have lost 93 per cent of their historical range. In the last 10 years tiger habitats have decreased by an alarming 45 percent.

The tiger is a charismatic cat that plays a pivotal role in the wellbeing and preservation of the multiplicity of an ecosystem, be it the saline mangrove ecology of Sundarbans National park or the thick jungles of Dudhwa National Park or the dry deciduous forest of Ranthambore. Well-managed ecotourism in national parks and sanctuaries with increased visitor numbers keep the poachers off, say experts.

Another view is that tourism needs to be encouraged so that young Indians at the forefront of changing attitudes toward the environmental problem gripping the nation can find pertinent solutions. Wildlife

tourism in India is evolving and with social media it is spreading as millennials seek encounters with “glamorous” wild animals.

The tiger conservationist Belinda Wright, who heads the Wildlife Protection Society of India (WPSI), has been working with State and Central forest officials for decades. She and her team have been instrumental in curtailing wildlife crime in India. While Belinda Wight is pleased that the tiger population in India appears to be doing well, she says: “It is important that tigers are recognized as an umbrella species and that their habitat is strictly protected so that all the species that live in their domain are protected. India must safeguard its biodiversity to provide a healthy environment for all living things including humans.”

On the subject of tourism, she says: “Tiger tourism is booming in India, but sadly, there is little respect or understanding of the importance of the lesser-known species that share the tiger’s home. We must make every effort to convert this interest in the tiger to secure an informed respect for our wild areas and all their inhabitants, big and small.”

The author is an independent journalist and photographer specializing in wilderness and travel.

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“Somehow I had become aware that elephants project their presence into an area around them, and that they have control over this, because when they didn’t want to be found I could be almost on top of them and pick up nothing at all. A little more experimentation and research and it became clear what was happening.”

-Lawrence Anthony,

The Elephant Whisperer: My Life with the Herd in the African Wild

India's Indigenous - Of, For, and From Nature

By Nayantara Siruguri

(Curated and published earlier by Sutradhar India on www.sutradharindia.com)

*"Let's remind ourselves, we are a part of nature.
Let's look at the stories we come from, the stories we create,
Of what we are made, of the value we generate."*

India is home to more than 700 indigenous communities, some of which are recognized as "Scheduled Tribes" in the Constitution of India. Each of these communities, some referring to themselves as "Adivasi", has its own set of belief systems and cultures that determine its people's worldview, arts, and lifestyles.

Indigenous peoples have historically shared spaces with wildlife and have been almost a part of natural ecosystems of different kinds – forest, desert, marine, riverine, and more. This has incredibly resulted in lived experiences that have been deeply shaped and influenced by their natural surroundings. Decades and centuries of these lived experiences – with plants, trees, rivers, mountains, animals, and the sea – have given rise to entire cultures and beliefs systems that have directly emerged from these shared spaces in nature. One may thus say that the culture of indigenous communities is an intricate reflection of their relationship with nature.

It is well-known that indigenous people – in India and worldwide – feel a strong emotional (and often spiritual) sense of belongingness to the forests or other natural habitats that they live in. They give importance and great regard to animals that they share spaces with, to the trees, agricultural and medicinal plants that they depend on, and to the water and soil resources that are essential to their survival. Sacred groves – forest areas that these communities hold sacred and of spiritual importance – have a presence in most indigenous cultures. The life of the people is not only dependent on their lands,

but it is also closely entwined. This way of living sets the stage for indigenous communities to form the core of systems that sustain, and also shows why community-based and community-led conservation systems often work much better and persist longer than those that are state or institution-led.

Such cultural elements among indigenous communities have traditionally given rise to sustainable and environmental-friendly lifestyles despite being dependent on forests and natural resources. This dependence on forest produce and natural resources, on the other hand, has helped develop a vast and rich pool of traditional ecological knowledge that persists even today, although threatened by contemporary rationalist perspectives and lack of scientific representation.

The rich knowledge systems of indigenous communities hold magnificent secrets about the way forward – towards a more inclusive, sustainable, and nature-centered world. When divorced from culture, however, they become meaningless – devoid of the very roots that brought them to life and sustained them for centuries. It is thus crucial to understand the cultural and spiritual foundations in which these experiences and knowledge systems are rooted – especially in a world where indigenous land rights and livelihoods are being endangered by deforestation, habitat loss, environmental degradation, land-grabbing, development projects, and a general disregard of indigenous rights.

Very often, driven by a curiosity about these incredible

Contd.. on page No. 60

News and Notes

Pet shop owner arrested in Noida for selling protected bird, turtle species: -

The district forest department on Friday confiscated several species of wildlife animals, whose sale is prohibited under the Wildlife Protection Act, from a pet shop in Noida's Sector 93. The department has registered a police complaint and the seller, 45-year-old Prashant Kumar, was arrested. Among the animals rescued were a turtle species native to India, four parakeets and 10 scaly-breasted munia, also known as spice finch, a species native to tropical Asia.

"We had received a complaint about the illegal pet shop and aquarium in Sector 93 selling some Indian species of turtle and birds. Upon inspection, we found this to be true. A FIR was lodged and the shop owner was arrested," said PK Srivastava, divisional forest officer, Gautam Budh Nagar.

Under the Wildlife Protection Act (1972), trade of about 1,800 Indian species and their derivatives is prohibited. However, the act is not applicable on certain foreign species kept as exotic pets, the official said.

"Prashant Kumar, the owner of Angel Fish Home, was held from the shop for keeping prohibited birds and turtles with the intent to sell them," a statement from the Noida police said.

A FIR has been lodged against the accused under relevant sections of the Indian Penal Code and he has also been booked under the Wildlife Protection Act, the police said.

Illegal Muram transporting tractor-trolley stopped, ranger attacked, hand broken: -

The forest department ranger was attacked for preventing illegal people from filling the muram in tractor-trolleys by illegally quarrying the village Chauprakhurd. Due to which the Ranger got fractured in one hand and

other parts of the body have suffered minor injuries. Ranger has been admitted to the district hospital. The police have registered a case against the accused and taken it under investigation. According to the information, Rangar Krishna Kumar Namdev of Damoh Range with his driver in government vehicle at 4 pm on Friday evening to Chauprakhurd village and he saw that a tractor-trolley near the hill was illegally transporting from the forest Murram. When he followed the trolley, the tractor driver increased the speed. Ranger chased the tractor trolley and finally the driver stopped the tractor-trolley. After this, as soon as the Ranger came down from Jeep, four-five people including Kailash Yadav and his son in the tractor trolley surrounded him.

Kailash Yadav abused and started threatening to kill the Ranger. Meanwhile, his son attacked Ranger with sticks and iron rods. The ranger informed senior officers. The accused fled.

Ranger was then brought to the district hospital. As soon as the information was received, DFO Vipin Patel, including SDO One Dharendra Singh reached Amla District Hospital. After first aid, he was X-rayed, and found that Ranger's hand is fractured.

Deer rescued from Bengaluru restaurant after being chased by feral dogs: -

In a curious turn of events, the staff of the Karnataka Forest Department and volunteers in Bengaluru rescued a deer stag from a Rajarajeshwari Nagar restaurant on Friday night. According to the volunteers and officials, the deer was chased by feral dogs from the Turahalli Reserve forest in the vicinity and it had taken refuge in an empty site in Krishna Gardens for two days. The rescue operations were initially led by Range Forest Officer (RFO) Gopal and Deputy RFO Naveen, started at 9.35 pm. Though fifteen forest staff and 13 volunteers had encircled the deer with nets, it escaped. From there, the deer broke loose and ran

towards the Uttarahalli-Kengeri Road, close to JSS Engineering Institute, a volunteer in the know said.

Eventually, it entered a restaurant where two volunteers, Dileep and Manjunath, were successful in holding onto the deer before forest staff took control of the situation at around 10:10 pm.

Videos of the deer getting captured and attended to have been widely shared in social media and personal messaging platforms. After examination by a doctor from People for Animals (PFA) the deer was released into the Turahalli forest.

Joseph Hoover, an activist with United Conservation Movement (a non-governmental organisation) and former member of the State Wildlife Board said feral dogs are a major issue in Turahalli Reserve Forest. At least 14 deer have been killed and devoured by these dogs over the last two years. "Deer are being driven by these feral dogs to take refuge in residential areas. We have been asking the forest department to act but they are citing fears of opposition from a section of animal rights activists," he said.

"The forest department is not doing anything to protect wildlife. Not only deer but even peacocks are getting devoured by these dogs. These dogs are not supposed to be entering the forest area and they need to be relocated. These are not wild dogs but neighbourhood street dogs which have

taken to hunting in packs. They get into the forest wherever the fencing or the walls are damaged. We are not saying that the dogs be killed but they must be relocated as we need to preserve the little bit of wildlife that is left," he added.



The Women without a heart:

The woman in the picture with a smile is Salwa Hussein! The woman without a heart in her body, a rare case in the world, as she carries her artificial heart in a bag. The British newspaper "Daily Mail" reported that Salwa Hussein, aged 39, is the only one who lives like this way in Britain.

She is the mother of two children, the bag that carries her heart is in her lap, it's always with her with a device with two batteries weighing 6.8 kg, which is an electric motor and a pump, The batteries push the air into a plastic bag in the patient's chest through attached tubes, for blood circulation in her body By God, Salwa, all our personal problems and worries are nothing Infront of yours, our petty issues are ashamed in front of your SMILE.

Continuation from page No. 58

cultures, we seek awareness and understanding of them – but our understanding remains incomplete without proper channels of exploration. How does one understand a culture, without being able to experience it first hand? How does one realize its importance, as a part of a community of citizens? How does one communicate something so profound and esoteric but rooted in everyday life at the same

time? The answer to these questions lies, I believe, somewhere within the frames on our walls.

Nayantara Siruguri is a student of B.A at Ramnarain Ruia Autonomous College, Mumbai. Sutradhar India is a social research and content platform that works towards different social, environmental and cultural topics using the medium of writing, poetry, visual art and performing arts.

LEGAL NOTES

Nawal Kishor Govardhan das ji Rathi Vs. State of Maharashtra and another

Nawal Kishor Govardhan das ji Rathi, a radiologist at Chandrapur, is the owner of the truck bearing registration No. MH-31-w-3442. It was seized by the Range Forest Officer, Waroora as it was used in commission of a wildlife offence by transporting meat of wild pigs, allegedly got killed by electrocution.

The owner of the truck filed Criminal. Application on 10.10. 2001 in the Court of Judicial First-Class Magistrate, Waroora even before the charge-sheet was filed in the court; and requested the court to release the vehicle on *Supratnama*. The court rejected the application on 29.10.2001.

Aggrieved by the order of the Magistrate, the owner of the truck approached the High Court of Bombay and filed Crl.Writ Petition No. 356/2001. The writ petition was heard by a Bench comprising Sri J.N. Patel and Sri R. C. Chavan, JJ. Their Lordships disposed of the matter on 26.08.2005. During hearing of the writ petition, it was argued on behalf of the petitioner that there is no bar for return of the vehicle under *Supratnama* to its owner even if it is found to be used in committing the offence under the Wildlife Protection Act. It was submitted that the vehicle can be forfeited on conviction of the person accused of the offence. The petitioner had no knowledge of the use of the vehicle for carrying the carcass of the wild pigs and he is not accused of committing the offence. It was submitted that the order of the Magistrate deserves to be quashed.

It is the case of the state that the application is made before the Magistrate even before the complaint was filed and at that stage the magistrate does not get the jurisdiction to grant relief to the petitioner. Seizure of the truck was made under section 50 of the Wildlife Protection Act as the truck was used for carrying two dead bodies of wild pigs. There is a clear violation of section 48 of Wildlife Protection Act. Under section 48-A of the Act, there is bar for transporting of any wild animal or animal article without the permission of the Chief Wildlife Warden. Under section 39 of the Act every vehicle, vessel etc. used for committing an offence and has been seized shall be Government property. It is submitted that the Charge-Sheet is filed later under the wildlife Protection Act.

The petitioner's advocate cited a ruling of the Supreme Court in *Asst. Conservator of Forests and Anr Vs. Sharad Rameshchandra Kale* (AIR 1998 SC 2927) and argued that the order of confiscation cannot be passed on finding that owner of truck had no knowledge that the truck was likely to be used for carrying forest produce in contravention Forest Act. But the Supreme Court judgment does not help the petitioner as there is no provision in the Wildlife Protection Act similar to the provisions available in the Forest Act. Wildlife Protection Act is a special statute which provides for a different procedure relating to seizure and confiscation of properties during the course of commission of offences under the Wildlife Protection Act and therefore the petition deserves to be dismissed. The state counsel submitted that in the impugned order, the Magistrate has taken into consideration various decisions of High Court and Supreme Court. The order of the Magistrate does not suffer from any error or illegality. Therefore, it does not call for interference. The court was in agreement with the submission of the State Counsel and felt that the impugned order does not call for any interference as the right of the petitioner to claim the vehicle does not stand foreclosed. The Learned Magistrate while disposing the petition was conscious of this fact and in para 15 of the impugned order it is observed that ----

"It is pertinent to note at this stage the vehicle of the applicant is neither forfeited nor confiscated to the state under section 51 of the Act. In the event the accused are held guilty the vehicle used for the said offence would be forfeited to the state Government. Although Section 39 (d) of the Act provides that vehicle, vessel, weapon, trap or tool, that has been used for committing an offence and has been seized under the provisions of the Act, shall be the property of the state Government. However, at this stage, unless a finding is given as required under section 51 of the Act, the vehicle cannot be forfeited to the state Government. The applicant will have

every opportunity of being heard at the time of the trial and, therefore, to my mind, at this stage there is no contravention of the principle of natural justice”.

In the facts and circumstances of the case, the High Court considered it appropriate to direct the Learned Magistrate to dispose of the trial expeditiously and on conclusion of the trial the Learned Magistrate shall give notice to the petitioner when he proceeds to pass an order of forfeiture under section 51 of the Wildlife Protection Act.

The petition is disposed of with a direction to the Magistrate to expeditiously dispose of the trial and issue notice to the person at the stage when he would propose to pass an order of forfeiture under section 51 of the Wildlife Protection Act.

Rule is made absolute.

Source: Internet

K.B.R

Indomitable Human Spirit **By K.C. Pillai**

Alas! behold the humankind
Seething and simmering in calamity
Bludgeoned and battered by the tiny unseen
Unprepared for the sudden apocalypse
Piteous wail of suffering millions
Pallid face of bereaved, bereft of sentience
Natural human bonds cruelly disrupted
Caught in the vortex of existential uncertainty
Ineffable impact on the poor is immeasurable
Cruel grin of palliative measures
Disquieted millions Whom to inculcate?
Is it the outcome of major world powers' conundrum?
Or berserk apathy to environmental values
Or a cold-blooded conspiracy Or sheer destiny
It's Prognosis still incomprehensible
Nevertheless!
The resilient human race
Determined to subdue the cataclysm
Valiant warriors in the forefront of Armageddon
Standing as a protective shield
Proving the pandemic is not eschatological
Trusting panacea is not elusive.
The indomitable human spirit Certain to triumph
And will emerge resplendent
Because, after all, human is part of Nature itself.
(The author is a retired Dy. Conservator of Forest from A.P.)

OBITUARY**Sri M. SELVAKUMAR****20.05.1966 - 24.08.2020**

We record with profound grief the sudden demise of Sri M. Selvakumar, Assistant Curator, Sri Venkateshwara Zoological Park, Tirupati, A.P. aged 54 years, while in service.

Sri M. Selvakumar was born on 20.05.1966 in a middle class / agricultural family in Patinikulam Place, Renigunta in Chittoor district of Andhra Pradesh to Sri M. Seril dass and Smt. M. Ruthmari. He completed M. Com in the year 1990 from S.V. University and joined the Sri Venkateshwara Zoological Park, Tirupati, A.P. on 02.07.1992 as Zoo Sergeant. He was an outstanding sportsman and he also qualified in the selections to the post of Excise Inspector in Excise Department, A.P. He opted to join the forest department due to his passion to serve forests and wildlife.

The job profile of a Zoo Sergeant is regulatory and confined to overseeing the functioning of the security staff and in regulating the visitors to the zoo. Because of his passion and interest in wildlife, the zoo curators gradually entrusted him with supervising the feeding of animals, cleanliness of the cages, shifting the animals etc works. He was very good in operating firearms and was a crack shot in any tranquillising operation. He picked up the nuances of zoo animal management very quickly and was mainly associated with capture of stray wildlife, tranquillisation, transportation of zoo animals and release of captured stray animals back to the forests. He had successfully captured stray leopards, sloth bears, wild herbivores and birds and the tally number to 25 operations.

When the Central Zoo Authority, New Delhi awarded the conservation breeding programme of Chousingha and Grey jungle fowl to Sri Venkateshwara Zoological Park, Tirupati, A.P, Sri Selvakumar played a key role in the successful breeding of the animals to an astounding figure of Chousingha 30 nos, Grey Jungle Fowl 75 nos. He was the man 'Friday' of the zoo and possessed extraordinary common sense.

He was an outstanding athlete and won laurels for the department in field events and was a football player. In the year 2014, he was promoted to the cadre of Assistant Curator of the rank Forest Range Officer and he continued working in the same post till 23.08.2020 evening. While on duty he was found collapsed at his desk and was rushed to the hospital and found positive for COVID 19 infection. He breathed his last during the early hours of 24.08.2020. He is survived by wife, an employee of TTD, a son who has completed his B. Tech and a daughter doing her B.A.M.S.

The Forest Department of A.P salutes the zoo covid-19 warrior and mourns his loss. May his soul rest in peace and may God grant strength to his family to overcome the loss. (Curator, SVZP, Tirupati)



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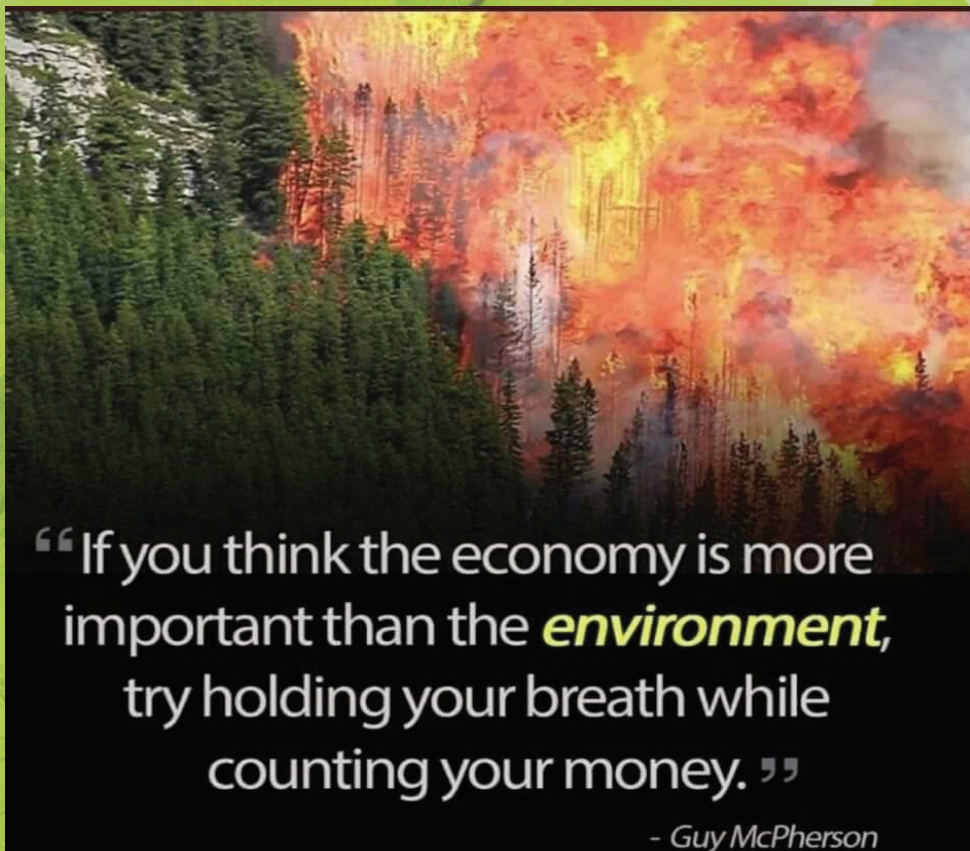
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- Guy McPherson

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