

Telangana Biodiversity

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A Newsletter of Centre for Biodiversity and Conservation Studies, Osmania University

Editorial

Hello! The second quarter of 2021 was practically a carbon copy of the previous year's! We hoped and thrilled at the prospect of putting behind the worst period of our era, which had been ushered in by the pandemic. However, the impending second wave arrived, locking us in and bringing all activity to a halt! Without a doubt, the vaccination campaign, combined with Covid appropriate behaviour, has provided some relief, but scientists believe that new and reemerging zoonotic virus illnesses may pose new issues in the near future. Covid-19 has been found to infect animals, both wild and domesticated, and it remains to be seen which direction these transmissions and infections may lead to the formation of new complications. It is becoming increasingly critical for humanity to become more aware, careful, and focused on cleanliness, hygiene, and the impact of zoonoses. On the other hand, we must mitigate the effects of deforestation and climate change by reducing our impact on wilderness, minimising our contact with wild animals, restoring lost ecosystems, and decreasing overall carbon footprint. Plants and animals with whom we share the planet are necessary for maintaining the ecological balance. They are frequently the reservoirs for a variety of infections. Pathogens spread from animals to people through physical contact; zoonoses can be managed if this path is broken.

Prof. D. Ravinder, Vice-Chancellor of the University, has graciously agreed to lead us!



Courtesy: BBC

Briefly

Hope for Pygmy Hog - World's smallest pig

A dozen (including seven males and five females) of the Pygmy Hog, *Porcula salvania*, world's smallest pigs have been released in late June 2021 into the wild in Manas National Park in Assam in northeastern India as part of a conservation programme to boost the population of a species once thought to have become extinct. Pygmy hogs live in tall, wet grasslands in terai region, and were once found along plains on the Himalayan foothills in India, Nepal and Bhutan. Its population declined in the 1960s, leading to fears it had become extinct until it was rediscovered in India's northeastern state of Assam in 1971. In 1996, several organisations including from state and national government collaborated to initiate the Pygmy Hog Conservation Programme and established a captive breeding facility with six hogs with an aim to revive their population. So far, the Pygmy Hog Conservation Programme has successfully reintroduced 142 pygmy hogs into the wild. Pygmy Hogs are an endangered species with less than 250 individuals in wild. Threats to their survival are habitat loss and degradation due to human settlements and agricultural encroachments.



Photo: Gautam Narayan

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Special Feature

Kinnerasani Wildlife Sanctuary

Kinnerasani Wildlife Sanctuary (17°46'30"N, 80°33'32"E) is located in Bhadrachalam Kothagudem District, Telangana State and is at a distance of about 15 km from the district headquarter, Kothagudem. The area of the sanctuary is stretched across 635.4 sq. km and it acquires its name from the perennial river 'Kinnerasani', which flows through the sanctuary, cutting it into hillocks and valleys before draining into the Godavari River. It was formerly a wildlife park, which was later declared a wildlife Sanctuary in 1981. Within the sanctuary lies Kinnerasani Dam and Reservoir, constructed in 1966, which is a significant source of water for Kothagudem Thermal Power Station and for lift irrigation

in the area. The sanctuary lies at the center of a network of Protected Areas, Eturnagaram WLS to the north, Pakhal WLS to the North-west, and Papikonda NP (in adjoining Andhra Pradesh) to the south-east. Its presence amidst the natural corridors connecting various PAs, including Kawal Tiger Reserve, makes it one of the most significant regions in the state for employing effective conservation measures.

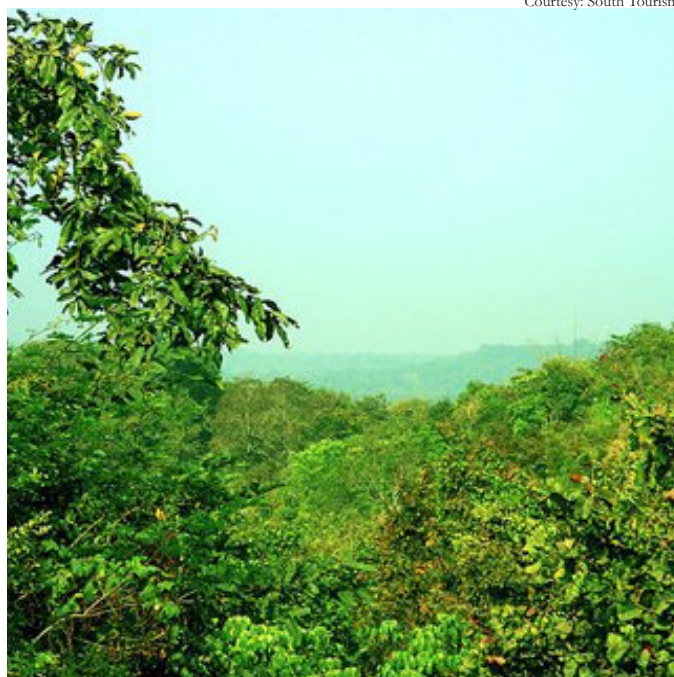
The sanctuary constitutes a part of Dandakaranya Forest Range, containing terrain of both plains and hills. The forest types are dense deciduous (moist and dry) and scrub, interspersed with meadows.

Apart from the core and buffer areas of this protected area, there is also present an Eco-sensitive Zone (containing about 70 villages) which is spread over an area of about 1449.44 sq. km, the extent of which ranges between 1 - 21 kilometers from the boundary of the sanctuary.

The weather conditions in the area are very hot and dry during the summers, when the temperature may go as high as 45° C. It is relatively warmer during the winters but the temperature may reach 16° C in the night. The area also receives annual average rainfall of 863 mm. All these conditions make Kinnerasani Wildlife Sanctuary an ideal region for thriving of floral and faunal diversity.



Photo: Pranay Raj



Courtesy: South Tourism

Flora

This protected area has dry deciduous forest type with dominant vegetation being Teak, Bamboo, *Terminalia* spp., *Anogeissus* spp., *Ficus* spp., Strychnine tree, *Adenosma indianum*, *Centranthera tranquebarica*, *Erycibe paniculata*, *Phaulopsis imbricata*, *Brachystelma telanganense*, and *Cassia* spp.

The other plant species include tengu, bandar, kanju, tapasi, etc. Amla, neem, and mango trees also occur very commonly. The tree canopy of this area provides suitable perching locations for many birds, including the migratory birds. Recently, a new variety of the plant species - *Amorphophallus konkanensis* var. *kinnerasaniensis* was reported from this area.

Fauna

Common bird species sighted in the protected area are - egrets, doves, fowls, kingfishers, quails, partridges, spoonbills, and open-billed storks along with many other. The mammalian species occurring in the area are - Chousingha, Sambar, Indian Gazelle, Leopard, Tiger, Blackbuck, Bison, Sloth Bear, Hyena, Panther, Chinkara, Chital (Spotted Deer), Gaur, Jackal, Wild Boar, Indian Muntjac (Barking Deer), Nilgai, Indian Crested Porcupine, Indian Hare, Jungle Cat, Ruddy Mongoose, Asian Palm Civet, Dhole (Wild Dog), and Rhesus Macaque. The Kinnerasani lake and water pools also harbor Marsh Crocodile. Few species of other reptiles, like, Python, Viper, Krait, Cobra, Monitor Lizard, and Chameleon are also reported to be present.

Folklore

The land on which the Kinnerasani Wildlife Sanctuary is situated has a spiritual significance along with environmental importance. According to Hindu mythology, area of this sanctuary is rendered divine and holy by the locals as it is believed to be a place where Lord Rama spent some days of his exile, the area originally known as the Dandakaranya forests of Treta Yuga.

With the initiation of the Government of Telangana State afforestation programme - Haritha Haram, and sincere efforts by the Forest Department officials, the forest cover of the sanctuary has increased significantly, leading to better resource management and conservation of the biodiversity of the area.

Threatened Taxa

Plant - *Abelmoschus moschatus* subsp. *tuberosus* (Span.) Borss. Waalk.



Photo: Raghu, e-Flora

Taxonomy Order Malvales; Family Malvaceae.

Geographic Range Endemic to India; and is distributed in Karnataka, Kerala, Tamil Nadu, and Telangana State.

State Distribution Rare herbaceous plant, found in the forested tracts of Tadwai Reserve Forest and Bhupalapalli Reserve Forest in Jayashankar Bhupalapalli district.

Population Nothing is known about its population status or trends.

Habitat & Ecology Erect, hispid, perennial herb, found in moist deciduous forests.

Major Threats The tubers of this plant are fed upon by wild pigs. Besides this, habitat fragmentation and livestock grazing are perceived as threats to this species.

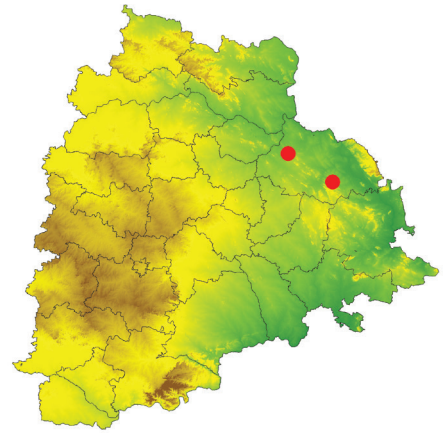
Use & Trade This species is not in trade.

Conservation Measures No species-specific conservation measures are in place.

Remarks

This taxon is found in moist deciduous forests. It does not occur in any protected areas. It is threatened by habitat destruction, predation by wild pigs, and livestock grazing. The estimated number of localities is 2; the estimated extent of occurrence (EOO) in Telangana State is <100 km², and the area of occupancy (AOO) is <10 km². There is an inferred continuing decline in the area, extent, and quality of suitable habitat. At the global level, this species has not been assessed. In Telangana State, this species is assessed as Critically Endangered, with the criteria B1ab(iii)+2ab(iii).

Distribution in Telangana State



Animal - *Petaurista philippensis* (Elliot, 1839)



Photo: Kaushik Damle

Taxonomy Class Mammalia; Order Rodentia; Family Sciuridae.

Geographic Range Widely distributed in South Asia, southeast Asia, and south and central China. In India, it is known from Andhra Pradesh, Telangana State, Bihar, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, and Tamil Nadu.

State Distribution Rare. Historically reported from Jayashankar Bhupalapalli, Warangal Urban, Suryapet, and Khammam districts.

Population Nothing is known about its population status or trends.

Habitat & Ecology This is a nocturnal and arboreal species, found in dry and moist deciduous forests. It also occurs in plantations. It prefer tall canopies.

Major Threats Threatened by habitat degradation and fragmentation, encroachment of forests by humans, and hunting for local consumption.

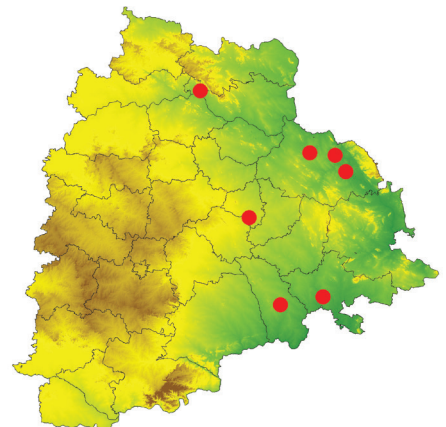
Use & Trade The species is hunted for local consumption.

Conservation Measures No species specific conservation measures are in place; included under Schedule II of the Wildlife (Protection) Act, 1972. It is known from Kawal Tiger Reserve and Eturnagaram Wildlife Sanctuary.

Remarks

This taxon is found in dense jungles, hilly forests, dry scrub and dry deciduous forests. It is known from Amrabad TR and Kawal TR. Threats to the species are not known. It is very rare in occurrence. It is known from two localities. The estimated extent of occurrence (EOO) in Telangana State is <5000 km², and the area of occupancy (AOO) is <200 km². There is an inferred continuing decline in the area, extent, and quality of suitable habitat. At the global level, this species has been assessed as Least Concern. In Telangana State, this species is assessed as Endangered, with the criteria B1b(iii).

Distribution in Telangana State



Pioneers in Conservation

Rahibai Soma Popere

Rahibai Soma Popere, a 54-year-old farmer is a well-known, self-made expert, who has a very ingrained knowledge in agro-biodiversity and innovative techniques in the cultivation of paddy crop for increased yield. She has been given the name 'Seed Mother' and hails from Kombhalne village, Ahmednagar District, Maharashtra. She is among three Indians on the BBC list of '100 Women 2018'. Rahibai holds expertise in native varieties of various crops and preparing hyacinth beans for self-help groups. Without any formal education, she gained extraordinary understanding of native crop diversity. She grows about 17 different crops in her farm. To begin with, she was able to convert two acres of unproductive land into fertile land with her tireless efforts and innovative techniques of irrigation. Her enthusiasm was noted by Maharashtra Institute of Technology Transfer for Rural Areas (MITTRA), which helped her to develop a nursery of the seeds of native crops. She is hell-bent



Photo courtesy: BAIF

on conserving and promoting native crop varieties since they are more resilient to heat and drought-like conditions, require less water for irrigation, need very less amount of fertilizers and pesticides, thus aiding in retaining soil fertility. They also contribute towards welfare of farmers as seeds of these crop varieties are less expensive compared to hybrid seeds. Rahibai also spearheaded the formation of a local Samiti which works to achieve this goal. She also trains farmers and students on ways to select seeds, keep fertile soils and manage pests. She has a number of awards to her name including – Best Seed Saver Award by Krishi Vigyan Kendra, Bhableshtar; Best Farmer Award, 2014-15 by BAIF Development Research Foundation; Nari Shakti Puraskar, 2018, by the Ministry of Women and Child Development, Government of India; and the most prestigious Padma Shri, 2020 by Government of India.

Environment Education

World Environment Day 2021

This decade (2021–2030) has been earmarked as 'United Nations Decade on Ecosystem Restoration' aiming to prevent, halt, and reverse the destruction of ecological resources present in the nature. This World Environment Day (5th June), kicked off the same with the theme 'Reimagine. Recreate. Restore.' Hyderabad marked the beginning of this day with many events by various organizations. In one such event at Infosys Campus located at Pocharam, attended by UN Environment Head Erik Solheim; Telangana IT Minister Shri K T Rama Rao familiarized people with the steps taken by the state government towards making green environment a possibility in the State. Haritha Haram – A Green Necklace for mother Earth programme – is implemented to revive the ecosystems in Telangana State by planting about 2.3 billion saplings during the course of next 5 years. This will potentially increase the green cover from 23% currently to 33%. Another innovative green initiative, the solar rooftop programme is able to generate more than 24 MW of energy and aiming to augment its efficiency in coming years. The State government is also planning to convert 3800 RTC buses plying in the city of Hyderabad into electric buses. Lastly, the State is also going to speed up the process of rejuvenating about 46,000 lakes and tanks in Telangana through the 'Mission Kakatiya'.

Courtesy: IT Ministry, Govt. of TS



Nature for Kids

Butterflies - beautiful and best friends of Biodiversity!

Nature has insects that can conjure up images of colourful summer gardens, sunshine, and warmth by their mere sight, and butterflies are one such group of insects. They constitute order Lepidoptera (= scaly wings), along with other group of remarkable insects – Moths. Butterflies are cold-blooded insects found in every habitat except Antarctica. Majority of them are active during the day. About 18,500 species of butterflies have been reported from around the world, of which, about 1500 species (belonging to six families) occur in India. Some regions of India, like Northeast India, Kerala, Arunachal Pradesh, the Himalayas, Nilgiri Hills, Western Ghats and Assam harbour a great butterfly diversity. The Western Ghats alone has about 330 species, out of which 48 are endemic to Nilgiri Biosphere Reserve.

Their body is divided into three parts – head, thorax, and abdomen. The head has antennae, a pair of compound eyes, and a long, coiled, and tubular ‘proboscis’ which is used to suck nectar and plant sap. Three pairs of legs have sensory receptors to ‘taste’



Photo: Harpreet Kaur

food. The two pairs of wings are covered with thousands of tiny scales arranged in overlapping rows and bright coloured and vivid designs. The scales also help in thermoregulation and camouflage. So next time you hold a butterfly and you have powdery substance stuck on your fingers, you know what it actually is!

Butterflies are considered flagship species for conservation, especially for invertebrates. They are excellent indicators of a healthy ecosystem. They also act as an important element of the food chain as the adults and caterpillars are prey for many other invertebrates and birds. Butterflies have also been widely used by ecologists as model organisms to study the impact of habitat loss and fragmentation, and climate change. They also render their services in nature by pollination of many plants.

An interesting life Journey!

Butterflies undergo a very complicated life history from an egg to a caterpillar, which is a voracious feeder, to further transforming into a pupa or chrysalis, which finally emerges into a beautiful adult butterfly! These series of changes are called “*metamorphosis*.”

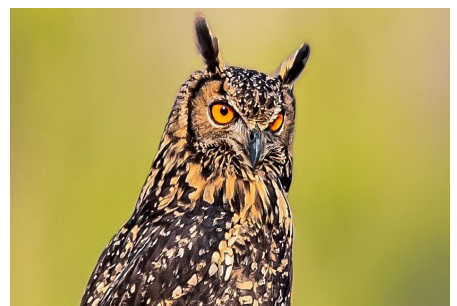
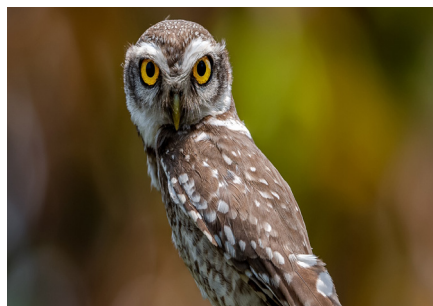
Our Biodiversity

Owls of Telangana State

Owls are mostly nocturnal birds of prey belonging to the Order Strigiformes and distributed among two families, Tytonidae (Barn Owls – having a heart-shaped facial disk) and Strigidae (Typical Owls – having a round facial disk). There are about 32 species of owls in India and of these, about 14 species, namely, Eastern barn owl, Eastern grass owl, Indian scops owl, Oriental scops owl, Indian eagle-owl, Spot-bellied eagle-owl, Dusky eagle-owl, Brown fish owl, Mottled wood owl, Brown wood owl, Jungle owlet, Spotted owlet, Brown hawk-owl, and Short-eared owl, have been reported to be present in Telangana. Owls inhabit a variety of habitats, ranging from deserts to forests, and human habitations.

Owls are an essential part of the ecosystem as they are at the apex of the food chain and are natural pest-control agents. In India, owls hold a significant place in Hindu mythology as they are the vahana (vehicle) of Goddess Lakshmi. However, illegal trade of owls in India is an issue of concern as they are widely used in black magic and sorcery linked with superstition, totems and taboos. They are hunted for their skull, feathers, claws, heart, liver, kidney, blood, eyes, beak, tears, meat and bones for ceremonial pujas and rituals, often aimed at creating overnight wealth.

Photo: Sriram Reddy



Feature - Flora

Glory Lily - *Gloriosa superba*

Classification

Kingdom: Plantae
Division: Magnoliophyta
Class: Liliopsida
Order: Liliales
Family: Colchicaceae
Genus: *Gloriosa*
Species: *superba*
Authority: L.



Flame Lily or Glory Lily, *Gloriosa superba* is a perennial, herbaceous, climber found in tropical and southern Africa (including Madagascar), and tropical Asia. In India, it is found throughout the tropical region, mostly in the moist deciduous areas. This species has been introduced in other parts of the world as an ornamental plant. The tuberous roots (rhizome) and tendrils at the end of leaves help in growth and to climb over other plants. Flowers are extremely showy with red or orange petals having yellow wavy margins curled upwards; six conspicuous stamens are also curled upwards; red seeds are contained in a fleshy oblong capsule (6 to 12 cm). This plant has very high levels of toxic alkaloid, colchicine, concentrated more in the tubers, but present in all parts of the plant. If consumed in high levels, it may have detrimental effects on human health and can be fatal to animals. Different parts of the plant are used for the medicinal properties in Ayurveda and Unani medicine. It helps in controlling flatulence, treat bladder conditions, leprosy, and lung problems. Powdered leaves are used to kill germs and heal open wounds; the tuber extracts serves as an abortifacient, but used to ease labor pain during childbirth. It is also effective against, cholera, typhus, STDs. Other uses - arrow poison in Nigeria and snake repellent in India. It is commonly called as *Agnishikha* in Telugu. Due to highly potent alkaloids, any part of this plant should only be administered by an expert.

Photo: Bishnu Sarangi

Feature - Fauna

Indian Pangolin - *Manis crassicaudata*

Classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Pholidota

Family: Manidae

Genus: *Manis*

Species: *crassicaudata*

Authority: E. Geoffroy



The Indian Pangolin (*Manis crassicaudata*) is a medium-sized (100 - 148 cm long), solitary, predominantly nocturnal, slow-moving, burrowing, and insect-eating mammal, distributed across southern Asia (native to the Indian sub-continent). Its distribution throughout India is abundant, except the extreme north-eastern regions and coincides with the distribution range of Chinese Pangolin in parts of north-eastern India. This species uses an array of habitats in tropical areas including forests, open grasslands, degraded habitats, arid areas, and human habitations. It is also known as ‘Scales anteater’ due to the presence of hard, overlapping scales around its body, except on the lower surface of head and trunk, and foot pads. These scales are meant to avoid predators and harsh environmental conditions. It lacks teeth, but a long, protrusible tongue makes this species specifically myrmecophagous (feeding on termites and ants). Three digits on strong forelimbs have sharp claws for burrowing and excavating anthills or termite hills. While all five digits of hind limbs have short, blunt claws. Excellent olfactory senses are meant for foraging and searching for a mate during breeding season. Unfortunately, this species is extensively hunted for international trade for its meat, scales, claws for use in traditional medicine. Due to increase in hunting pressure and habitat loss, this species is listed ‘Endangered’ by IUCN.

Photo: Ajit K. Huilgal

Events

Essay writing on #I am part of the solution



22 మే 2021
జీవవైవిధ్య దినోత్సవం

మేము పరిష్కారంలో భాగం
CBCS, OU #ప్రకృతి కోసం

Courtesy: CBCS, OU

On the occasion of International Biodiversity Day, 2021, an essay writing competition was organized by Centre for Biodiversity and Conservation Studies, CBCS, OU. UG and PG students from various colleges of Telangana were invited to send in their essays on the theme 'I'm part of the solution', in conjunction with this year's theme, 'We are part of the solution'. The essays were invited in both English and Telugu languages. As an overwhelming response, around 200 essay entries were sent for scrutiny and out of these, best three essays were announced. All the participants were provided an e-certificate of participation.

News

Telangana bags central awards on Biodiversity Day

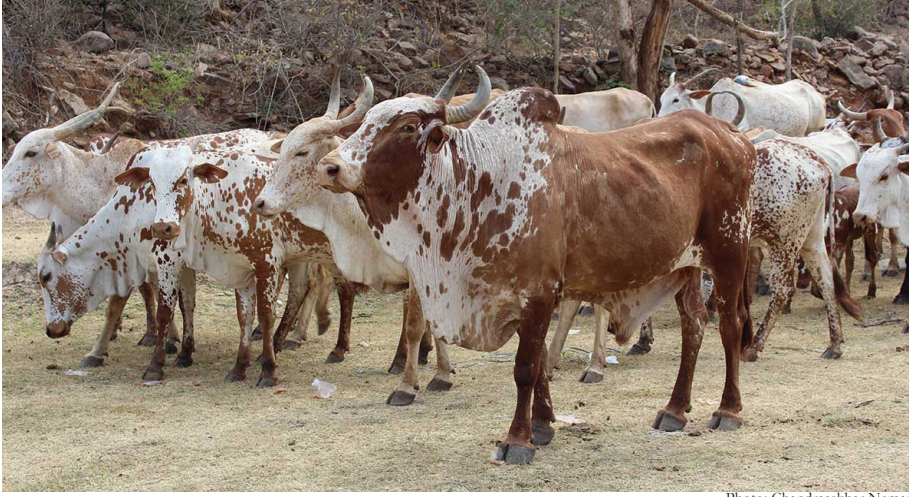


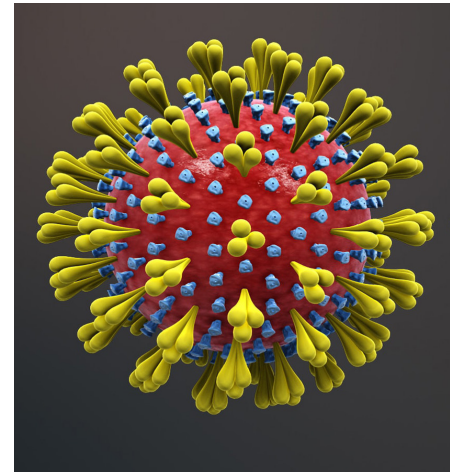
Photo: Chandrasekhar Nemani

This International Biodiversity Day on 22nd May 2021, National Biodiversity Authority and the Ministry of Environment, Forest & Climate Change, Govt. of India has announced India Biodiversity Awards, and two institutions from Telangana bagged the awards. Amrabad Poda Laxmi Govu Sangam, Telangana received the award in the category 'Conservation of Domesticated Species' for conservation of an indigenous cattle breed, the Poda Thurupu, in Amrabad District. M/s Valagro Biosciences Private Limited, Hyderabad was awarded in the category 'Replicable Mechanisms for Access and Benefit Sharing (ABS)' for working efficiently towards sustainable access to biological resources and ensuring royalties were distributed to the villages from where the biological resources were accessed.

Signing Off

New strain, new threat...

Viruses are always changing, and that can cause a new variant, or strain, of a virus to form. A variant usually doesn't affect how the virus works. Scientists around the world are tracking changes in the virus that causes COVID-19. Their research is helping experts understand whether certain COVID-19 variants spread faster than others, how they might affect your health, and how effective different vaccines might be against them. New variants of virus are formed due to mutations - changes in genetic matter. There are six strains of COVID-19. The ones with concern are: Alpha (B.1.1.7) - first noted in people in southeastern England with 70% more transmissible capability; Beta (B.1.351) first noted in people from South Africa and Nigeria with more transmissible capability; Gamma (P.1) first noted in people from Brazil, more contagious; and Delta (B.1.617.2) first noted in people from India. The Delta strain is very contagious and has caused a huge surge in cases in Mid-April 2021. This variant has been reported from over 43 countries including the U.S., U.K., Australia, and Singapore. It's causing more cases of COVID-19 in young people. The virus that causes COVID-19 will probably keep changing. Experts may find new variants. It's impossible to predict how those virus changes might affect what happens. But change is just what viruses do. The only solution, presently seems, COVID-appropriate behaviour and mass vaccination.



Courtesy: WebMD

We hope you have enjoyed this issue... If you wish to share any information, please do not hesitate to contact us.



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