



NEWS BULLETIN

Plants and Pollution

ENVIS RP-NBRI

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Vol. 01, January 2020

Understanding of root problem before Plantation

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Trump hails 1tn trees plan but ignores roots of problem

The Guardian, 21 January 2020

Trees are great. They give us oxygen, take away CO₂, provide nests for birds and habitats for wild-life, protect against flooding and even help to clean up lung-shredding air pollutants from traffic.

As the world's forests come under increasing threat from fires, agriculture and logging, the World Economic Forum-led initiative to ensure 1tn trees are restored, saved from loss or better protected by 2050 has gathered international support. Now Donald Trump is onboard too, he told Davos.

Exactly what Trump's support amounts to in practical terms is unclear. Will he restore the protected lands that he opened up for commercial development, the biggest reduction in public lands in US history? Reverse his push for logging in the Alaskan Tongass National Forest? Bring back the jobs cut from the US Forest Service? Will he lean on his ally Jair Bolsonaro in Brazil to stop the burning of the Amazon?

Or will he just sign up to a snappy feel-good headline? Because who, after all, doesn't like trees?

WEF is launching its 1T.org initiative at Davos on Wednesday, aiming to use the restoration of nature to tackle the climate and biodiversity crises. It is estimated that the planet is losing 10bn trees a year, and large-scale projects to restore and replant forests are needed.

To make a real impact, however, tree fans must take on some of the biggest vested interests on the planet. Fossil fuel businesses are rightly regarded as the main.....

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Mass tree planting along India's Cauvery River has scientists worried

Mongabay, 22 January 2020

The Isha Foundation, a spiritual organization headquartered in south India, is taking on the cause of revitalizing India's imperiled rivers. With government and public support, it says it has successfully raised enough money to plant more than 46 million trees in its test project site, the Cauvery River basin. However, some ecologists and scientists oppose the methods of the planned project. While they say they appreciate the sentiment behind the idea, they add that mass tree planting will not solve the real issues and may even cause new problems.

Despite the criticism, on Sept. 3 last year the organization commenced its Rally for Cauvery. Isha Foundation head Jaggi Vasudev, more commonly referred to as Sadhguru, kicked off the 3,500-kilometer (2,200-mile) rally with a motorcycle convoy to raise awareness of the cause.

Sadhguru is a well-known yogi, mystic, teacher and author in India, and his fame has helped his cause. Support has come from leading Indian politicians and movie stars, and even influential personalities like Leonardo DiCaprio, as well as millions of Indian citizens.

On its website, the Isha Foundation says the project will "support farmers to plant 2.42 billion trees through agroforestry." It is raising funds.....

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Plant: Absorber of Toxic Copounds

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Philippine fern efficiently absorbs arsenic, copper from toxic mining soil

Mongabay, 09 January 2020

MANILA — Filipino scientists have discovered what might be the next big indigenous plant material for rehabilitating a mining site teeming with copper and arsenic — and it's a largely ignored local fern.

Published in the peer-reviewed journal *Chemosphere*, the study by a group of scientists led by Rene Claveria of the Ateneo de Manila University records the unique ability of *Pteris melanocaulon* to absorb copper in its roots and arsenic in its leaves in large doses.

"It's not common for ferns to absorb both high concentrates of copper and arsenic," Claveria, an environmental geology expert, tells Mongabay. "Plants don't do it simultaneously in large doses. It's something new."

The fern was spotted in the mossy areas of an abandoned mining site in the province of Surigao del Norte by the scientists scouring major mining sites across the Philippines to study copper metallophytes under a government-funded research program.

The study of metallophytes, plants that have the ability to thrive on soils with high concentrations of heavy metals that are too toxic for other plant species, has been a growing interest among scholars, particularly for their possible use in phytoremediation, the process of cleaning up mineral-rich soil and groundwater using plants and trees.

"We are interested in metallophytes ... plants that grow on mining areas," Claveria says. "While analyzing all these plants,..... [Read More...](#)

The drive to stop plastic pollution growing in new forests

BBC News, 22 January 2020

Hundreds of thousands of plastic tube tree guards are used every year to protect saplings from being eaten by deer, rabbits and voles.

Most are made from single-use plastics and are often left to disintegrate in the open when a tree grows.

Forestry and Land Scotland said it would now use recyclable tubes or those containing half as much plastic.

Planting trees is widely seen as environmentally beneficial, so it is ironic that it can also be a source of vast quantities of plastic waste. Findhorn-based charity Trees for Life has planted more than 1.6 million trees in the Highlands as part of efforts to regenerate native forests.

It hardly ever uses plastic tree tubes. Instead, it uses fencing to keep hungry deer away from saplings.

Trees for Life conservation manager Alan McDonnell said it was very easy to put tree guards out and then forget about them.

He said: "If people are carrying out very large planting projects and relying on tree tubes then they are bringing a lot of plastic into the landscape. For years all you see is these cylinders sticking up." He said the tube would eventually burst or the tree would fail inside it.

He added: "The tube will stand there for years, then slowly fall down, break up and then gradually it will..... [Read More...](#)



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A step toward create forest

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Families plant an urban forest to fight effects of pollution

The Guardian, 05 January 2020

It's a cold Saturday morning in November, yet hundreds of people have descended on Beckton District Park in east London for a day of tree planting. Dozens of shovels stuck into the muddy earth are waiting to be grabbed by newcomers, while four cordoned-off areas are already full of volunteers measuring and digging holes, before carefully planting the young seedlings, called whips.

"By the time the day is done, you look around and there are thousands of trees," says Jazmin Glen, 26, a volunteer supervisor at the event. "It's amazing to think you might come back in however many years and there's an actual forest here that you've been a part of creating."

The team hope to plant 9,000 trees by the end of the day, and although right now the spindly plants look half dead, Glen says they are just dormant and will start to bloom in a couple of seasons.

The day has been organised by Trees for Cities, one of the Guardian and Observer's four climate emergency appeal charities, and the only UK voluntary organisation working on a national scale to plant trees in urban areas most in need – often places that have high levels of both social and environmental deprivation.

"The places that are greenest are often the wealthiest, with the best sort of social indicators," says the charity's chief executive, David Elliott.

"So our work tends to focus on the more deprived parts of towns and cities, where our projects can..... [Read More...](#)

Unknown saviors of the environment: Thirty-five men create a forest from barren land

Mongabay, 24 January 2020

Prinson Daimari is overwhelmed with pride every time he visits the lush green forest with birds' nests perched on the treetops inside the Bhairabkunda reserve forest in Udalguri district of Assam in North East India.

The 52-year-old stands under a canopy of trees and recalls those days when he, along with his 34 colleagues, spent countless hours shoveling the boulders and stones from beneath the earth to make the barren, sandy land fertile. For a first-time visitor, it is hard to believe that the same stretch of land now boasts of a dense forest spread across 750 hectares, rich in biodiversity, with elephants frequenting the area even during the day.

"We have virtually spent our prime years in converting a barren and uneven land filled with rocks and stones into a picturesque forest inhabited by venomous reptiles and wild animals," Prinson said with a smile on his face as the sun's rays try to peek through the tall bamboo trees. "We have not only created a forest but have also set a successful example of environmental conservation through our hard work."

The seeds for creating the dense forest were laid during the late 1980s, when the 35 youths credited for the man-made forest were members of All Bodo Students Union (ABSU), a student organization formed in 1967 to fight for a separate territory, meant to be carved out from..... [Read More...](#)



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Rare and Modified Plant: Climate

CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW

Rare plant species are especially vulnerable to climate change, and rarity is more common than previously understood

Mongabay, 09 January 2020

Rare plant species are far more likely to go extinct than common species, yet we know surprisingly little about global species abundance.

Most efforts to quantify species abundance focus on local communities, according to the authors of a study published late last year in the journal *Science Advances*, which limits our ability to accurately assess plant rarity.

“Fortunately, with the rapid development of biodiversity databases and networks in the past decade, it is becoming increasingly possible to quantify continental and global patterns of biodiversity and test competing models for the origin and maintenance of these patterns at a global scale,” according to the authors of the study, a research team led by Brian Enquist, a professor of ecology and evolutionary biology at the University of Arizona.

The study was published to coincide with the UN climate negotiations that took place in Madrid, Spain last month.

Enquist and co-authors from around the world spent 10 years compiling a database that now includes 20 million observational records of plant species occurrence, which they say is the largest dataset on botanical biodiversity ever created. Their goal is for that information to be used to inform conservation strategies that take the effects of climate change into account and help reduce global biodiversity loss.

The researchers found that there are about 435,000 unique land plant species on planet Earth, and that a large fraction of them,..... [Read More...](#)

Modified plants to curb climate change

Science Daily, January 21, 2020

Bioinformatics researchers usually work with mathematical computer models. Over the past months, Thomas Dandekar and his team have been studying whether the metabolic networks of plants can be modulated so as to enable the plants to fix more carbon dioxide. To achieve this, the scientists combined two different methods to modulate the metabolism of the plant cell. By performing complex calculations, they found out that this combination enables plants to absorb five times more carbon dioxide than in the normal state.

Now their theoretical calculations need to be tested in practice. Muhammad Naseem, a colleague of Dandekar, is in charge of conducting these experiments. Born in Pakistan, Naseem has a PhD in molecular biology. He works both in Würzburg and at Zayed University in Abu Dhabi, the capital of the United Arab Emirates where he has been a professor for two years. On 4 January, Naseem returned to Abu Dhabi.

He plans to start the practical test there in the course of this year. “We will experiment with tobacco plants and thale cress, also known as *Arabidopsis thaliana*, which are both easy to modify,” the scientist explains.

“If we continue on our current path, climate change will have disastrous consequences,” Dandekar warns. The scientist expects that the average temperature could rise by up to four degrees compared to..... [Read More...](#)