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Study on Air Pollutants

- A new study says that Black Carbon (BC) has adverse effect on human health and leads to premature mortality.
- The Scientists from the Centre of Excellence in Climate Change Research who conducted the study were supported by the Climate Change programme of Department of Science and Technology (DST).
- The study explored the individual and cumulative impact of BC aerosol, fine (PM 2.5), and coarse (PM 10) particulates, and trace gases (SO2, NO2, O3) on premature mortality in Varanasi of Indo-Gangetic plain.
- The Scientists utilized daily all-cause mortality and ambient air quality from 2009 to 2016 to clearly establish a significant impact of BC aerosols, NO2 and, PM2.5 exposure on mortality.
- **Findings** - The inclusion of co-pollutants (NO2 & PM 2.5) in the multi-pollutant model increased the individual mortality risks for BC aerosols.
- The effect of pollutants was more prominent for males, age group 5-44 and, in winter. The adverse effect of pollutants wasn't limited to current day of exposure but can extend as high as up to 5 days (Lag effect).
- The mortality rises linearly with an increase in air pollutants level and shows adverse impact at higher levels.

Black Carbon

- Black carbon, commonly known as soot, is a solid particle or aerosol that is produced from incomplete combustion.
- It is a form of particulate air pollutant that contributes to warming of the atmosphere.

Pyrostria laljii

- Recently, Pyrostria laljii has been discovered from the Andaman Islands.
- It is a 15-meter-tall tree that belongs to the genus of the coffee family.
- The new species is also the first record of the genus Pyrostria in India. Plants belonging to genus Pyrostria are usually found in Madagascar.
- The tree is distinguished by a long stem with a whitish coating on the trunk, and oblong-obovate leaves with a cuneate base.
- It was first reported from South Andaman's Wandoor forest. The other places

in the Andaman and Nicobar Islands where the tree is found are,
    - Tirur forest near the Jarawa Rerserve Forest and
    - Chidia Tapu (Munda Pahar) Forest.

- Pyrostria laljii has been listed as 'Critically Endangered' on the International Union for Conservation of Nature's (IUCN) Red List.
- While the genus Pyrostria is not found in India, there are several genera from the family Rubiaceae that are common in India - Cinchona, coffee, adina, hamelia, ixora, etc. They have high potential for economic value.

Rivina andamanensis

- It is a new species of pokeweed. It was found growing under large trees, shaded and rocky areas, along with herbs and shrubby plants.
- This new species represents the first record of the pokeweed family Petiveriaceae in the Andaman and Nicobar Islands.

Insights of Indigenous People on Climate Change

- The Food and Agricultural Organization (FAO) studied the indigenous people living on the frontline of climate change.
- Indigenous people worldwide are self-reliant and resilient, living sustainably and in harmony with their ecosystems.
- They play a vital role in countering global threats like destruction of nature, climate change, biodiversity loss and risk of future pandemics.
- There are some 478 million indigenous peoples in the world, according to FAO, whose research also explored 11 indigenous communities.
    1. Reindeer herding by the Inari Sámi people in Nellim, Finland,
    2. The forest-based food system of the Baka indigenous people in South-eastern Cameroon and
    3. The Milpa food system of the Maya Ch'orti' people or "the maize people" in Chiquimula, Guatemala.
- **Threats** - Indigenous peoples' traditional ways of life are at high risk from climate change and the expansion of various industrial and commercial activities.
- Despite surviving for centuries, Indigenous Peoples' agri-food systems may disappear in the next years due to a number of drivers threatening their future.
- Being adaptive is the main resilient element of these food systems.
- Indigenous peoples adapt their food generation and consumption to the seasonality and natural cycles observed in their surrounding ecosystems, not in the opposite way as most other societies do.

Gamma-Ray Burst

- The highest energy afterglow from the most notable Gamma Ray Burst (GRB) explosion from a galaxy 4.5 billion light years away did not follow the evolution expected in standard afterglow models.
- [Gamma-ray bursts (GRBs) are short-lived bursts of gamma-ray light, the most energetic form of light.
- Lasting anywhere from a few milliseconds to several minutes, GRBs shine hundreds of times brighter than a typical supernova and about a million trillion times as bright as the Sun.]
- The detection of high energy photons (TeV Photons) from this GRB provides new insights to unravel the underlying physical processes at work which result in such explosions.
- The GRB with ultra-high energy photons called GRB 190114C was detected for the first time in 2019 by the Major Atmospheric Gamma Imaging Cherenkov Telescopes (MAGIC).
- The GRB lasted for a brief period, followed by an initial bright flash in high energies known as the **'prompt emission'**.
- A less luminous but long-lasting counterpart known as the **'afterglow'** was detected after the prompt emission.
- Detailed modelling of the recent afterglow indicates that the parameters describing the fraction of energy in electron population and magnetic field are evolving with time and not constant as generally seen in GRBs.
- The evolution of these parameters, at early times, may play a role in producing the bright TeV emission.

Gender Self-identification

- The Spanish government approved the first draft of a bill that would allow anyone over the age of 14 to legally change gender without a medical diagnosis or hormone therapy.
- **Gender self-identification or 'self-id'**- It is the concept that a person should be allowed to legally identify with the gender of their choice by simply declaring so, and without facing any medical tests.
- This has been a long held demand of trans-right groups around the world, as prejudice against trans people remains rampant.
- As per the advocacy group ILGA (the International Lesbian, Gay, Bisexual, Trans and Intersex Association), 15 countries around the world recognise self-ID.
- They are Denmark, Portugal, Norway, Malta, Argentina, Luxembourg, Ireland, Greece, Costa Rica, Mexico (only in Mexico City), Brazil, Colombia, Ecuador and Uruguay.

- **Process for declaring one's sex in India** - The rights of transgender persons are governed by the Transgender Persons (Protection of Rights) Act, 2019 and the Rules, 2020.
- Under the Rules, an application to declare gender is to be made to the District Magistrate. Parents can also make an application on behalf of their child.
- There is no need for transgender persons to go through a medical examination for declaring their desired sex.
- As per the Rules, state governments have also been directed to
    1. Constitute welfare boards for transgender persons to protect their rights and interests, and
    2. Facilitate access to schemes and welfare measures framed by the Centre.

Improvement of Quality of Aquatic Life in Chambal

- The aquatic animal population, including dolphins and gharial, in the Chambal River increased significantly in the past year due to a decrease in demand for fish and sand amid the pandemic-induced lockdown.
- [The Chambal River passes through Rajasthan, Uttar Pradesh and Madhya Pradesh.]
- **Threats for the dolphins** - Illegal sand mining and illegal net fishing were the threats for the dolphins. There were the major reasons behind the death of calves.
- The dolphin pools were identified in 2019. The dolphin population was falling every year between 2016 and 2020 but for the first time in six years the population has increased.
- **Reasons** - The Ghat (bank) in-charges were deployed near the pools to check illegal net fishing.
- But with the slowdown of the business of hotels and restaurants during the lockdown and other restrictions imposed due to Covid-19, illegal net fishing has almost stopped.
- Decrease of demand of both sand and fish due to lockdown also helped us in saving calves.
- **Impact** - The improvement of quality of aquatic life in the Chambal River caused an increase in the population of gharial crocodile by 17% and crocodiles by 24%.

Source: PIB, The Hindu, The Indian Express, India Blooms, Hindustan Times



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