Prelim Bits 15-02-2022 | UPSC Daily Current Affairs

Koala

Australian government declared the koala as 'Endangered' in the states of Queensland and New South Wales, and the Australian Capital Territory.

- Koala (*Phascolarctos cinereus*) is a **marsupial** which is a mammal with a pouch for the development of offspring.
- They are **endemic to Australia**. They are found in the eucalyptus forests of eastern Australia.
- They have grey fur with a cream-coloured chest, and strong, clawed feet, perfect for living in the branches of trees.
- It is listed as '**Vulnerable'** as per the IUCN Red List of Threatened Species. There are now fewer than 500,000 left in the wild.
- **Threats** - Climate change, Habitat destruction and loss, increased disturbance by humans, disease and most of all, bushfires as well as forest and wildfires.
- Chlamydia, a bacterial disease, has wrought havoc on koala populations by forming cysts inside breeding adults, leading to infertility.
- But the biggest culprit has been the bushfire season of 2019-20, known in Australia as 'Black Summer'.

Forest Fire

- Forest Fire means an uncontrolled fire occurring in vegetation more than 1.8 metres (6 feet) in height.
- These fires often reach the proportions of a major conflagration and are sometimes begun by combustion and heat from surface and ground fires.
- There are three conditions that need to be present in order for a wildfire to burn: fuel, oxygen, and a heat source.
- The impact of climate change has led to longer, more intense fire seasons and an increase in the average number of elevated fire weather days, as measured by the Forest Fire Danger Index (FFDI).
- The year 2021 saw the highest annual accumulated FFDI on record.
- In India, forest fires usually happen because of heatwaves, dry conditions, lack of moisture and lots of dry leaf cover.
- Temperatures are increasing in the mountains faster than the plains.

Reference

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3. https://www.savethekoala.com/about-koalas/distribution/
4. https://www.savethekoala.com/about-koalas/threats-to-the-koala/
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Lassa Fever

According to the European Centre for Disease Prevention and Control, about 80% of the Lassa fever cases are asymptomatic and therefore remain undiagnosed.

- Lassa fever is a zoonotic acute viral haemorrhagic disease.
- **Discovery** - The Lassa fever-causing virus is found in West Africa and was first discovered in 1969 in Lassa, Nigeria.
- The fever is primarily found in countries in West Africa including Sierra Leone, Liberia, Guinea, and Nigeria where it is endemic.
- **Spread** - The host of Lassa virus is a rodent known as the multimammate rat (*Mastomys natalensis*).
- A person can become infected if they come in contact with household items of food that is contaminated with the urine or feces of an infected rat.
- It can also be spread, though rarely, if a person comes in contact with a sick person's infected bodily fluids or through mucous membranes such as the eyes, nose or the mouth.
- Person-to-person transmission is more common in healthcare settings.
- Even so, people don't usually become contagious before symptoms appear and cannot transmit the infection through casual contact such as through hugging, shaking hands or sitting near someone who is infected.
- **Symptoms** typically appear 1-3 weeks after exposure.
- Mild symptoms include slight fever, fatigue, weakness and headache and more serious symptoms include bleeding, difficulty breathing, vomiting, facial swelling, pain in the chest, back, and abdomen and shock.
- Death can occur from 2 weeks of the onset of symptoms, usually as a result of multi-organ failure.
- Nearly one-third of those infected report various degrees of deafness. In many such cases, the hearing loss can be permanent.
- **Prevention** - The best way to avoid getting infected is to avoid contact with rats.
- **Treatment** - Lassa fever can be fatal, but it can be treated if diagnosed early.

Reference

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2. https://www.cdc.gov/vhf/lassa/index.html#:~:text=Lassa%20fever%20is%20an%20animal,is%20distributed%20throughout%20the%20region.
3. https://www.cdc.gov/vhf/lassa/transmission/index.html

Accelerate Vigyan Scheme

Science and Engineering Research Board (SERB) has invited applications under 'ABHYAAS', a program of 'Accelerate Vigyan' scheme for the summer season (May 2022-July 2022).

- Accelerate Vigyan (AV) strives to provide a big push to high-end scientific research and prepare scientific workforce, which can venture into research careers and a knowledge-based economy.
- AV aims to expand the research base in the country, with three broad goals,
    1. Consolidation / aggregation of all scientific training programs,
    2. Initiating high-end orientation workshops and
    3. Creating opportunities for training and skill internships.

- An Inter-Ministerial Overseeing Committee (IMOC) involving all the scientific ministries/departments has been constituted for the purpose of supporting SERB in implementing the AV scheme.

Components of Accelerate Vigyan

- ABHYAAS Programme is a program of AV scheme.
- It aims to boost R&D by enabling and grooming potential PG/PhD students by means of developing their research skills in selected areas across different disciplines or fields.
- It has two components -
    - High-End Workshops i.e. KARYASHALA and
    - Training and Skill Internship i.e. VRITIKA.
- Duration of the workshop is at least one week, but not more than two weeks per workshop for 'KAARYASHALA' and at least four weeks but not exceeding two months per intern for 'VRITIKA'.
- SAYONJIKA is an open-ended program to catalogue the capacity building activities in science and technology supported by all government funding agencies in the country.
- SANGOSHTI is a pre-existing program of SERB for the organization of workshops.

Science and Engineering Research Board

- It is a statutory body under the Department of Science and Technology (DST), Ministry of Science and Technology established by an Act of the Parliament of India in 2009.
- It is chaired by the Secretary to the Government of India in the DST.
- It was set up for promoting basic research in science and engineering and to provide financial assistance to scientists, academic institutions, R&D labs, industrial concerns and other agencies for such research.

Reference

1. https://www.downtoearth.org.in/news/science-technology/serb-calls-for-applications-under-accelerate-vigyan-scheme-81461
2. http://serb.gov.in/AVigyan.php

Graphene

The Kerala government announced the country's first Graphene Innovation Centre, a joint venture of Digital University of Kerala, Centre for Materials for Electronics Technology (C-MET) and Tata Steel Limited.

- Graphene is a single layer or **monolayer of carbon atoms**, tightly bound in a hexagonal honeycomb lattice.
- It is an **allotrope of carbon** in the form of a plane of sp2-bonded atoms with a molecular bond length of 0.142 nanometres.
- The separate layers of graphene in graphite are held together by **van der Waals forces**, which can be overcome during exfoliation of graphene from graphite.
- **Characteristics** - Graphene is
    1. The thinnest compound known to man at one atom thick,
    2. The lightest material known (with 1 sq. M. weighing 0.77 mg),
    3. The strongest compound discovered (due to the very strong covalent bonds),
    4. The best conductor of heat at room temperature,
    5. The best conductor of electricity known and

6. High melting and boiling points.

Reference

1. https://indianexpress.com/article/india/kerala/first-graphene-innovation-centre-kerala-pinarayi-vijayan-7753377/
2. https://www.graphenea.com/pages/graphene#.YgtIBN9BzIU

EOS-04

India's Polar Satellite Launch Vehicle PSLV-C52 injected Earth Observation Satellite EOS-04, into an intended sun synchronous polar orbit of 529 km altitude from Satish Dhawan Space Centre, SHAR, Sriharikota.

- EOS-04 is a Radar Imaging Satellite designed to provide high quality images under all weather conditions for applications such as Agriculture, Forestry & Plantations, Soil Moisture & Hydrology and Flood mapping.
- PSLV-C52/EOS-04 has a mission life of 10 years.
- The vehicle also placed two small co-passenger satellites,
    1. A student satellite (INSPIREsat-1) from Indian Institute of Space Science & Technology (IIST) in association with Laboratory of Atmospheric & Space Physics at University of Colorado, and
    2. A technology demonstrator satellite (INS-2TD) from ISRO, which is a precursor to India-Bhutan Joint Satellite (INS-2B).

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