Prelim Bits 19-07-2022 | UPSC Daily Current Affairs

Marburg Virus

The first case of the Marburg virus has been confirmed officially by Ghana.

- Marburg virus disease (MVD), earlier known as Marburg haemorrhagic fever, was first detected in 1967.
- It is a severe, highly infectious, often **fatal hemorrhagic fever**.
- Marburg, like Ebola, is a **filovirus**; and both diseases are clinically similar.
- **Hosts** - Rousettus fruit bats are considered as the natural hosts for Marburg virus.
- However, African green monkeys imported from Uganda were the source of the first animal-to-human infection.
- Human-to-human transmission takes place through direct contact with the blood, secretions, organs or other bodily fluids of infected people.
- **Symptoms -** After the onset of symptoms, MVD can manifest itself in the form of high fever, muscle aches and severe headache.
- Around the third day, patients report abdominal pain, vomiting, severe watery diarrhoea and cramping.
- In this phase, the patient has a “ghost-like” appearance with deep-set eyes, expressionless faces, and extreme lethargy.
- The patients report bleeding from nose and gums, and blood appearing in vomits and faeces. Severe blood loss leads to death, often between 8 to 9 days after symptoms begin.
- **Diagnosis -** The disease is confirmed by lab testing of samples, which like Coronavirus and Ebola are extreme biohazard risk.
- **Treatment -** As of now, there is no approved antiviral treatment or vaccine for MVD.
- It can be managed with supportive care.
- Rehydration with oral or intravenous fluids, and treatment of specific symptoms can help prevent death.
- Remdesivir and Favipiravir, monoclonal antibody treatments developed for the Ebola virus, are also being considered for compassionate use or expanded access.

The WHO says that the disease has an average fatality rate of around 50%. But, it can be as low as 24% or as high as 88% depending on virus strain and case management.

Reference

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Terzan 2

NASA has released an image of the globular cluster Terzan 2 in the constellation Scorpio captured by the Hubble Space Telescope.

- Globular clusters are the stable, tightly bound clusters of tens of thousands to millions of stars.
- They are found across a variety of galaxies.
- They get their regular, spherical shape from the **intense gravitational attraction** between the closely packed stars.
- The new image captured by Hubble looks remarkably similar to the image of Terzan 9 captured earlier this year.

  Terzan 2 is in the Scorpio constellation while Terzan 9 is in the Sagittarius constellation.

- **Working** - Hubble's design allows the use of multiple instruments to inspect astronomical objects despite having only one primary mirror.
- Light from distant astronomical objects enters the telescope's 2.4-metre primary mirror.
- The primary mirror then reflects the light into the depths of the telescope where the smaller mirror directs the light into individual instruments.

Galactic Gem

- Hubble also captured a "galactic gem" - the CGCG 396-2 galaxy merger.
- The CGCG 396-2 galaxy merger is an uncommon multi-armed galaxy merger that is 520 million light-years away from Earth in the direction of the constellation Orion.
- The image of the CGCG 396-2 was captured by Hubble's Advanced Camera for Surveys.
- The observation of the galaxy merger was first made by volunteers who are part of the Galaxy Zoo citizen science project.

Galaxy Zoo Citizen Science Project

- It is a citizen science project where thousands of volunteers classify galaxies to help scientists sort through the vast amounts of data generated by robotic telescopes.
- For the project, NASA made a web interface and invited citizen scientists to contribute to classifying more than 900,000 galaxies by eye.
- Since its inception in 2007, the Galaxy Zoo project has contributed to over 100 peer-reviewed scientific articles and the classification of over 40 million galaxies.
- Its success also inspired the Zooniverse portal, which hosts many such projects using the same techniques across various fields in astronomy.

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Y-3023 Dunagiri

Defence Minsiter launched Y-3023 Dunagiri, Project 17A frigate built by Garden Reach Shipbuilders Limited (GRSE).

- Y- 3023 Dunagiri is the fourth ship of Project 17A Frigates.
- It would be a world class stealth frigate with multidimensional capabilities to destroy enemies from sea, sky, and underwater.
- It is built for the Indian Navy.
- It is named after a mountain range in the state of Uttarakhand.
- P17A Frigates are follow-on class of the P17 (Shivalik Class) Frigates.
- Seven P17A Frigates are under various stages of construction at Mazagaon Dock Limited (MDL) and GRSE.
- **Related Links** – Project 17A

Reference

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Azores High

An extremely large 'Azores High' has resulted in abnormally dry conditions across the western Mediterranean, including the Iberian Peninsula, according to a new study.

Iberian Peninsula is primarily occupied by Spain and Portugal.

- Azores High is a **subtropical high pressure system** that extends over the eastern subtropical North Atlantic and western Europe **during winter**.
- It is associated with anticyclonic winds in the subtropical North Atlantic.
- It is formed by dry air aloft descending the subtropics and coincides with the downward branch of the **Hadley Circulation**.

Hadley Cells are the low-latitude overturning circulations that have air rising at the equator and air sinking at roughly 30° latitude. They could extend all the way to the poles.

They are responsible for the trade winds in the Tropics and control low-latitude weather patterns.

- **Finding of the study** - An annual drying of 5-10 millimetres per year per decade has been recorded in the Iberian Peninsula throughout the second half of the 20th century.
- A further 10-20% drop in winter precipitation is expected by the end of the 21st century.

- These projected changes make agriculture of the Iberian region some of the most vulnerable in Europe. The study projected,
    1. Olive-growing regions in southern Spain will suffer a 30% decline in production by 2100
    2. Cultivation area in grape-growing regions across the Iberian Peninsula will shrink 25-99% by 2050 due to severe water deficits that will render land unsuitable for viticulture.
- **Expansion** - The Azores High expansion emerged after 1850 and strengthened in the twentieth century.
- It is driven by external climate forces of the industrial era, which is **atmospheric greenhouse gas concentrations**.
- Winters with an extremely large Azores High were significantly more common in the industrial era (since 1850) than in pre-industrial times.
- The study identified a robust increase in the frequency of extremely large Azores High Area (AHA) events. It has also identified an overall expansion signal in the winter Azores High over the past 100 years.
- The study showed that the dramatic changes in the Azores High has made changes in North Atlantic climate within the past millennium.

> An expanding Azores High agrees with reports of a poleward shift in the North Atlantic storm track and an increase in anticyclone frequency at the Azores High's poleward edge, and a positive trend in regional subtropical indicators.

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Forest Conservation Rules 2022

Recently, the latest version of the Forest Conservation Rules, which consolidates changes to the Forest Conservation Act over the years from various amendments and court ruling, was made public.

> It is alleged that the latest version of the rules allowed forestland to be diverted to industry without settling questions of the rights of forest dwellers and tribals who resided on those lands.

- The Forest Conservation Rules deal with the implementation of the Forest Conservation Act (FCA), 1980.
- They prescribe the **procedure** to be followed for **forestland to be diverted for non-forestry uses** such as road construction, highway development, railway lines, and mining.
- The broad aims of the Forest Conservation Act are
    1. To protect forest and wildlife,
    2. To put brakes on State governments' attempts to hive off forest land for commercial projects and
    3. To increase the area under forests.
- **FAC** - For forestland beyond 5 hectares, approval for diverting land must be given by the

Central government.

- This is via a specially constituted committee, called the Forest Advisory Committee (FAC).
- This committee examines
    1. Whether the user agency, or those who have requested forest land, have made a convincing case for the upheaval of that specific parcel of land,
    2. Whether they have a plan in place to ensure that the ensuing damage will be minimal and the said piece of land doesn't cause damage to wildlife habitat.
- Once the FAC is convinced and approves (or rejects) a proposal, it is forwarded to the concerned State government where the land is located.
- The concerned State government then has to ensure that provisions of the Forest Right Act, 2006 are complied with.

The Forest Right Act, 2006 protects the rights of forest dwellers and tribals over their land. It is also known as the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

- The FAC approval also means that the future users of the land must provide compensatory land for afforestation as well as pay the net present value (ranging between ₹10-15 lakh per hectare.)
- **Updated rules -** The new rules make a provision for private parties to cultivate plantations and sell them as land to companies who need to meet compensatory forestation targets.
- This will help India increase forest cover as well as solve the problems of the States of not finding land within their jurisdiction for compensatory purposes.
- There is the absence of wording of what happens to tribals and forest-dwelling communities whose land would be hived off for developmental work.
- Prior to the updated rules, state bodies would forward documents to the FAC that would also include information on the status of whether the forest rights of locals in the area were settled.
- After 2009, the Environment Ministry passed an order mandating that proposals would not be entertained by the FAC unless,
    1. There was a letter from the State specifying that the forest rights in the place had been "settled" and
    2. The gram sabha, or the governing body in villages in the area, had given their written consent to the diversion of forest.
- Now, the new Rules say that the consent of Gram Sabha is not needed.
- Only in passing, is it mentioned that the States will ensure "settlement" of Forest Rights Acts applicable. This doesn't automatically imply the consent of the resident tribals and forest dwellers.
- The new Rules also gives the right to construct structures for bonafide purposes including forest protection measures and residential units (up to an area of 250 sq meters as one-time relaxation) in Forests.

In reality, the FAC generally approves land for diversion without examining questions around consent as it relies on the State government to ensure that this is done.

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