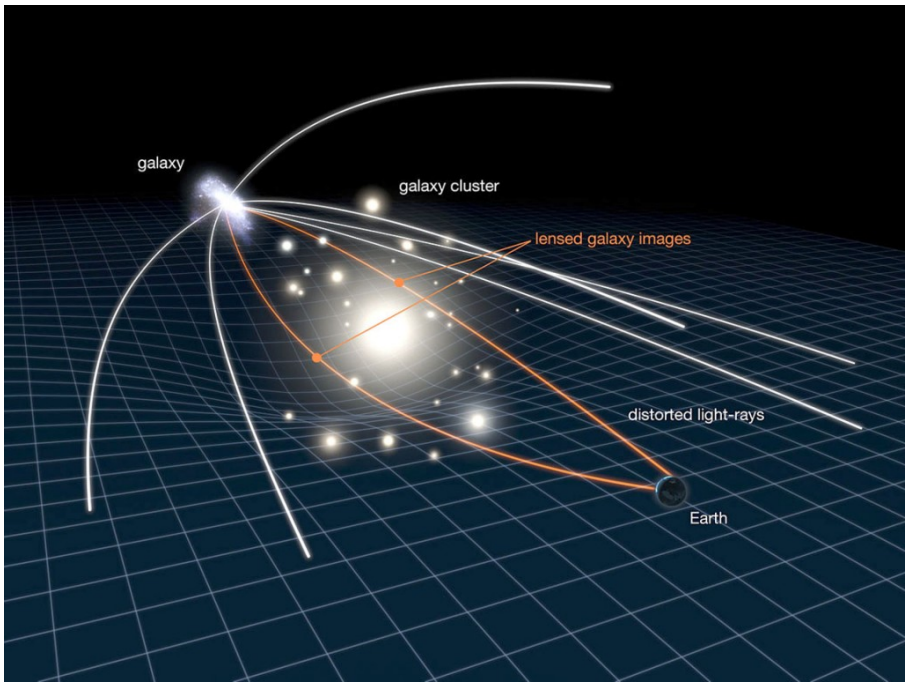
Prelim Bits 27-08-2019

Gravitational lensing

- Using NASA's James Webb Space Telescope researchers plan to investigate how new stars are born.
- For this, a natural phenomenon called "Gravitational lensing" is to be used.
- The gravitational field of a massive object will extend far into space, and cause light rays passing close to that object to be bent and refocused somewhere else.
- This phenomenon is 'Gravitational lensing', simply put, 'mass bends light'.
- The effect is analogous to that produced by a lens.



- The more massive the object, the stronger its gravitational field and hence the greater the bending of light rays.
- It is just like using denser materials to make optical lenses results in a greater amount of refraction.
- In effect, these are natural, cosmic telescopes, called gravitational lenses.
- These large celestial objects will magnify the light from distant galaxies that are at or near the peak of star formation.
- The effect allows researchers to study the details of early galaxies too far away.
- Gravitational lensing happens on all scales,

1. The gravitational field of galaxies and clusters of galaxies can lens light.
2. On smaller objects such as stars and planets.
3. Even the mass of our own bodies will lens light passing near us a tiny bit, although the effect is too small to ever measure.

- The Milky Way today forms the equivalent of one Sun every year, but in the past, that rate was up to 100 times greater.
- NASA now plans to look billions of years into the past in order to understand how our Sun formed.
- The programme is called 'Targeting Extremely Magnified Panchromatic Lensed Arcs and Their Extended Star Formation', or **TEMPLATES**.

CoP 18 of the CITES

- Over 100 nations, acting within the framework of **CITES**, approved a proposal by India, Nepal and Bangladesh.
- It is to prohibit commercial international trade in a species of 'Otter' native to the subcontinent and some other parts of Asia.

- The Conference also accepted a separate proposal by India, moved together with the EU, the US and the Philippines.

    1. It is for inclusion of a species of 'Gecko lizard' for protection as a species not necessarily threatened with extinction.
    2. It is found widely in South Asia, the US, and Madagascar.
    3. To control the trade in order to avoid utilisation incompatible with their survival.

- Members voted to move the Smooth-coated otter (Lutrogale perspicillata) from CITES Appendix II to CITES Appendix I.

    1. It is considered to be facing a high risk of extinction
    2. It is detrimentally affected by international trade and habitat loss.

- The other proposal that was passed was to include the 'Tokay gecko' (Gekko

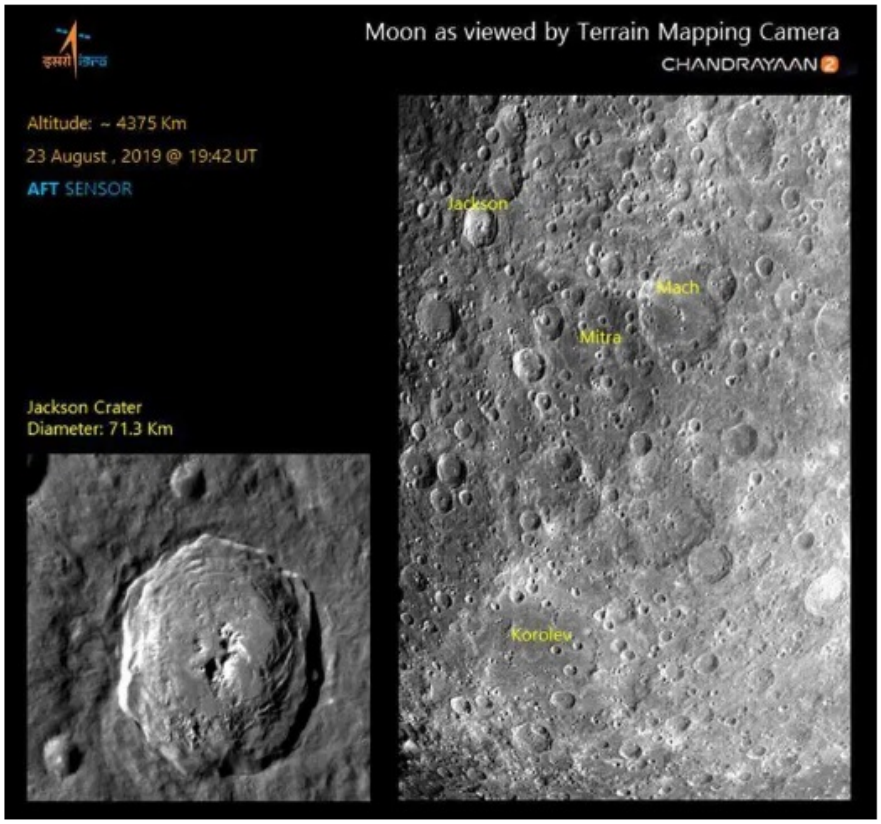
gecko) in CITES Appendix II.
- India had proposed Appendix I status for the small-clawed otter, mako shark, the Indian star tortoise and the Tokay gecko.

CITES

- It is an international agreement aimed at ensuring that international trade in specimens of wild animals and plants does not threaten their survival.
- It was drafted after a resolution was adopted at a meeting of the members of the **IUCN** in 1963.
- Convention was agreed in Washington DC, therefore, sometimes referred to as the 'Washington Convention'.
- It entered into force on July 1, 1975, and now has 183 parties.
- States and regional economic integration organisations adhere voluntarily to CITES.
- The Convention is legally binding on the Parties in the sense that they are committed to implementing it.
- However, it does not take the place of national laws and it provides a framework for Parties to make domestic legislation.
- To ensure that the Convention is implemented effectively in their national jurisdictions.

Images from Chandrayaan-2

- ISRO released the images of the lunar surface captured from the Chandrayaan-2 spacecraft orbiting the Moon.
- Taken by the Terrain Mapping Camera-2 of Chandrayaan-2, the images show, craters named after various scientists,



The Mitra crater, photographed by Chandrayaan 2, was named after Professor Sisir Kumar Mitra, an Indian physicist and Padma Bhushan recipient. (Source: ISRO)

- The system of nomenclature evolved over the years and is now standardised.
- In a resolution by the International Astronomical Union in 1973, crater and crater-like formations are given the names of astronomers or eminent scientists , posthumously.
- Among other lunar features,

1. Mountains are given names corresponding to the geographical names of mountains of the Earth,
2. The extensive dark surfaces are given names that correspond to the mental states of humans.

Source: PIB, The Indian Express