



CURRENT AFFAIRS PROGRAM

PRE-CUM-MAINS 2024

JUNE 2023- BOOKLET-3

TABLE OF CONTENTS

1. General Studies-1	2
1) Geography: Heat Waves	2
A) Prelims Understanding: What is Heat Stroke?.....	4
2) Geography: Urban Heat Island (UHI) Effect	4
3) Geography: Cyclones	6
A) Why tropical cyclones don't originate on western coast of S America, Africa and Australia.....	8
B) How are cyclones originating in Indian Ocean named?	8
C) Cyclone Color Coding	9
D) Cyclone Biparjoy (June 2023).....	9
E) Excellent Work of Disaster Management:	10
F) Why are tropical cyclones becoming more dangerous?	10
G) Way Forward:.....	10
2. General Studies-2	11
1) Social Justice: LGBTQIA+.....	11
2) The transgender Persons (Protection of Rights) Act, 2019.....	13
3) Prelims: Intersex Inclusive Progress Pride Flag	15
3. General Studies-3	17
1) Environment: Miyawaki Forests	17
4. Prelims Facts	19
1) Places in News: Lake Victoria.....	19
2) Places: Venetian Grand Canal	20
3) Culture: Gandhi Peace Prize, 2021	20
4) Science: Cocaine	21
5) Science: Space and Astronomy: Star BetelGeuse.....	21
6) Anthropology: Did Homo Naledi made rock art and buried their dead?	22
A) Evolution of Humans.....	22
B) Homo Naledi	23

7)	Biodiversity: Himalayan Brown Bear (<i>Ursus Arctos Isabellinus</i>)	23
8)	Biodiversity: Orchids of Darjeeling Hills and DOab are facing threats	24
9)	Defence: INS Kirpan.....	26

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1) GEOGRAPHY: HEAT WAVES

- **Why in news?**
 - Many Heat wave deaths in Uttar Pradesh and Bihar (June 2023)
 - Earlier in April 2023, **13 people died from apparent heatstroke** while attending a government award function in an open space in Navi Mumbai. This is possibly the **biggest ever heatwave-related death toll from a single event in the country** and brings back to spotlight on potential risks from heatwaves, whose intensity and frequency is expected to rise because of climate change.
- **Example Questions**
 - What are heat waves? Suggest a strategy to reduce India's vulnerability to heatwaves. [15 marks, 250 words]
 - With a focus on the Oct 2019 guidelines from the National Disaster Management Authority (NDMA), discuss the mechanisms for preparedness to deal with Heat Waves in India. [15 marks, 250 words]
 - Heatwaves can pose economic challenges to various sectors. Evaluate the economic consequences of heatwaves on industries such as agriculture, tourism, and energy, and suggest some measures to minimize their adverse effects [15 marks, 250 words]
- **Definition**
 - A heat wave is a **period of abnormally high temperatures, more than the normal maximum temperature** that occurs during the **summer season** usually in the north-western parts of India. In India, heat waves **typically occur between March and June**, and in some rare cases extend till July.
 - **Indian Meteorological Department (IMD)** has given following criteria for heat waves.
 - **Maximum Temperature of at least 40 degree Celsius for Plains, 37 degrees Celsius for coastal regions** and atleast **30 degree Celsius for hilly regions**.
 - Following conditions are used declare heat waves:
 - a. **Based on Departure from Normal**
 - **Heat Wave:** Departure from normal is 4.5 degree to 6.4 degree.
 - **Severe Heat Wave:** Departure from normal is > 6.4 degree.
 - b. **Based on Actual Maximum Temperature (for plains only)**
 - **Heat Wave:** When actual maximum temperature \geq 45 degree Celsius
 - **Severe Heat Wave:** When actual maximum temperature \geq 47 degree Celsius.
- **Increasing cases of Heat Waves in India:** According to Lancet Report, India faced **60 million heatwave exposure events** in 2016, a rise from 40 million exposures in 2012. Similarly, the **average length of heat waves** in India ranged from **3-4 days**, which is more than double of **global average of 0.8 - 1.8 days**. The key factors responsible for this are:
 - **Climate change -> higher temperatures**
 - According to a report by UNICEF "*The Coldest year of the Rest of Their Lives*" - **nearly every child will face frequent heatwaves by 2050**.
 - **Sparser Pre-Monsoon shower and Delayed Monsoon**
 - This weather pattern coupled with **El-Nino effect**, which often increases temperature in Asia, combine to create the record high temperatures.

- The **Loo (hot and dry winds)** originating from **Pakistan and Northwest India**, has also contributed to increasing temperature in India.
 - **Urbanization and its problems like Urban Heat Island (UHI) Effect** exacerbates the problem of heat wave in many parts of our country.
 - **Decreasing Tree Covers** -> concrete jungles, land heats up more.

- **Impact of Heatwaves**
 - **Health Impacts**
 - The heat waves are associated with increased rate of heat stress and heat stroke, worsening heart failures and acute kidney injury from dehydration.
 - Children, elderlyies and those with pre-existing morbidities are particularly vulnerable.
 - According the NDMA, more than 24,000 people have died in India due to heat waves between 1992-2015.

 - **Economic Loss**
 - According to Lancet, the output of workforce in India declined by 7%, equivalent to 75 billion labor hours every year.

 - **Worsening of air pollution problems** -> increased electricity use -> more fuel burned.

- **Steps Taken So Far**
 - The **IMD** has regularly issued heat wave warnings in different parts of the country to make people aware of the worsening situation.

 - The **NDMA** has suggested things like covering of head, cross-ventilating rooms and sleeping under a slightly wet sheet.

- **NDMA's revised guidelines for prevention and management of Heat Waves in India (Oct 2019)**
 - **Aim/Objective**
 - The guideline aims to provide framework for developing Heat Action Plans for implementation, inter-agency coordination and impact evaluation of heat wave response activities in cities/towns.

 - **Developing a Heat-wave Plans**
 - Generating heat wave risk and vulnerability map and mapping hotspots for developing a strategic mitigation action plan.
 - Identifying **Vulnerable Population** - elderlyes, pregnant women, chronic disease patient, resident of a particular type of housing, certain type of occupations etc.
 - Identification and Evaluation of factors leading to disproportionate increase in temperature in the city.

 - Reducing Temperature in the cities through vertical gardens, small parks with water fountains etc.
 - Coordinate with Research institutions for better built environment.
 - Government budget should allocate funds for R&D in this field
 - Curb Future UHI manifestation by incorporating findings from the built environment assessment
 - Adhere to city building codes.
 - Preparedness at the local level for health eventualities.
 - Health care system capacity building
 - Collaboration with private and Non-Government and Civil Society

- Establish Early Warning System and Communication Systems
 - Developing inter-agency response plan and coordination in the field.

- **Other Steps that can be taken:**
 - **Preparedness:** Already discussed with NDMA guidelines
 - **Response:**
 - Ensuring quick advanced communication and guidelines during heatwave condition.
 - Drinking water supply should be increased along the roadside during heatwave conditions
 - Health facilities should respond with all the relevant facilities.
 - **Other steps:**
 - **Reviewing the existing occupational health standards, labor laws, and sector regulation** for worker's safety.
 - **Special focus on farm laborers** as the agricultural sector was more vulnerable compared to the industrial and service sectors because workers there were more likely to be exposed to heat.
 - Increased work on amenities like increased access to drinking water, indoor ventilation, healthcare, regular work breaks, and protection against wage loss.
 - **Promoting more greenery throughout the city** especially on both sides of the roads to ensure cooler roads.
 - **Making communities more aware and resilient** to after effects of the heatwaves.
 - Internationally, the **global community** should work towards achieving the climate change mitigation goals by working towards Paris Climate targets and making the NDCs more ambitious.

A) PRELIMS UNDERSTANDING: WHAT IS HEAT STROKE?

- A heat stroke happens when the ambient temperature is so high that the body's cooling mechanism (sweating) is not able to bring down the temperature of the core. The body temperature may shoot upto 40-degree C. In these situations there is severe imbalance of salts such as sodium and potassium in the body.
- The high core temperature coupled with salt imbalances disrupts the organs, leading to host of symptoms.
 - It can affect the brain, making a person foggy, drowsy, and in severe cases may also lead to a person going into a coma.
 - It can also lead to kidney and liver damage as well.
- A cascade of such symptoms may also lead to death due to heat stroke.
- **What should be done during such situations:**
 - In severe cases, the aim is to bring down the core temperature of the body fast. This can be done by pouring cold water over the person, making them drink cold drinks, and giving them electrolytes to balance salt levels.
 - **Visit hospitals quickly** if they are exhibiting symptoms like high body temperature, but no sweat, feeling drowsy, vomiting, not passing urine, and not breathing properly.
- **How to prevent heat stroke?**
 - Don't go out between 12 noon - 3 pm. Avoid strenuous activities during this period.
 - If you have stepped out, ensure that you are drinking water even if you don't feel thirsty. Drink other hydrating fluids, like Lassi, lemon water, buttermilk, or ORS that can maintain electrolytes levels.
 - Don't consume coffee, tea, and carbonated drinks as they by dehydrate you further.
 - Wear light weight, light-colored, loose, and porous cotton clothes.

2) GEOGRAPHY: URBAN HEAT ISLAND (UHI) EFFECT

- **Probable Questions?**
 - i. What is Urban Heat Island? What are the key factors responsible for the phenomena. [150 words, 10 marks]
 - ii. "Urban Heat Island effect is accentuated by rapid urbanization". Elaborate. Suggest some measures to deal with the phenomena. [200 words, 12.5 marks]
- **Introduction**
 - UHI is an urban area which is significantly warmer than the surrounding rural areas.
 - The temperature difference is more stark during the day hours and night. Weak winds reduces the heat transfer and makes this phenomena more apparent.
- **Causes**
 - The main cause of UHI effect is the modification of land surfaces.
 - Extensive concrete and asphalt surfaces, which absorb and retain heat from sun. These materials have low albedo (reflectivity) and high heat capacity, leading to absorption and storage of solar radiation.
 - Unscientific Urban Planning and Layout may also be responsible for UHI effect. Density of buildings, street patterns, and the arrangements of tall structures may affect the air flow and restrict the dissipation of heat.
 - Decreased vegetation cover and reduction in agri fields: Vegetation help in regulating temperature by a process of evatranspiration. In the absence of vegetation, this cooling effect reduces.
 - Decrease in water bodies (like lakes and ponds) over the years reduce the cooling effect during summers.
 - Increasing population also increase the human generated heat through refrigerators, ACs etc.
- **Harmful Impacts**
 - UHI increases the probability of long duration heat waves and it also exacerbates the impact of heat waves.
 - It leads to increased energy consumption. This is due to greater demand for cooling in hot weather conditions
 - Elevated Emissions of Air Pollutants and Greenhouse Gases
 - Increased energy consumption leads to more greenhouse gas emissions as more fossils will be burned for the energy.
 - Fossil fuels also produce other harmful pollutants such as Sulphur dioxide, Nitrogen oxides, Particulate Matter, Carbon monoxide etc.
 - The pollutants further result in formation of ground level ozone, acid rains etc.
 - Ozone is formed when NO_x reacts with Volatile Organic Compounds in presence of sunlight. If environment becomes hotter, more ground level ozone will be formed.
 - It also decreases water quality as warmer waters put stress on the ecosystem.
 - Storm water which gets warm will affect the nearby ponds, lakes and rivers too.
 - **Infrastructure Damage:** The excessive heat in urban areas can cause damage to infrastructure, particularly roads, pavements and buildings.
 - Some experts believe that it may be contributing to global warming.
- **Some positive impacts**
 - Lengthening the plant growing season in very cold regions.
- **How Urban Heat Island effect can be mitigated?**
 - **Proper Urban Planning** - keep UHI effect in mind, while planning urban development.

- Lower building height, aligning streets against the sun's path (i.e. in north-south direction) could prevent new layouts from heating up.
 - Focus on energy efficient buildings which will ensure insulation, high-performance windows etc.
 - Create monitoring systems to automatically identify UHIs.
 - **Green Infrastructure**
 - It includes Green Roofs (Roof partially or completely covered by vegetation)
 - Painting house in light colors
 - Promoting urban forestry (For e.g. use Miyawaki method)
 - **Protect Water Bodies and Permeable Surface:**
 - This will ensure high soil moisture and proper cooling of cities.
 - **Community Engagement and Education**
 - Promoting behavioral changes like reducing energy consumption, planting more trees, etc.
 - **Collaborative governance:**
 - Promote collaboration between various stakeholders like state government, local bodies, NGOs etc.
- **Conclusion:**
- These measures can not only help mitigate UHI effect, but can also improve urban resilience, enhance public health and create sustainable and livable cities.

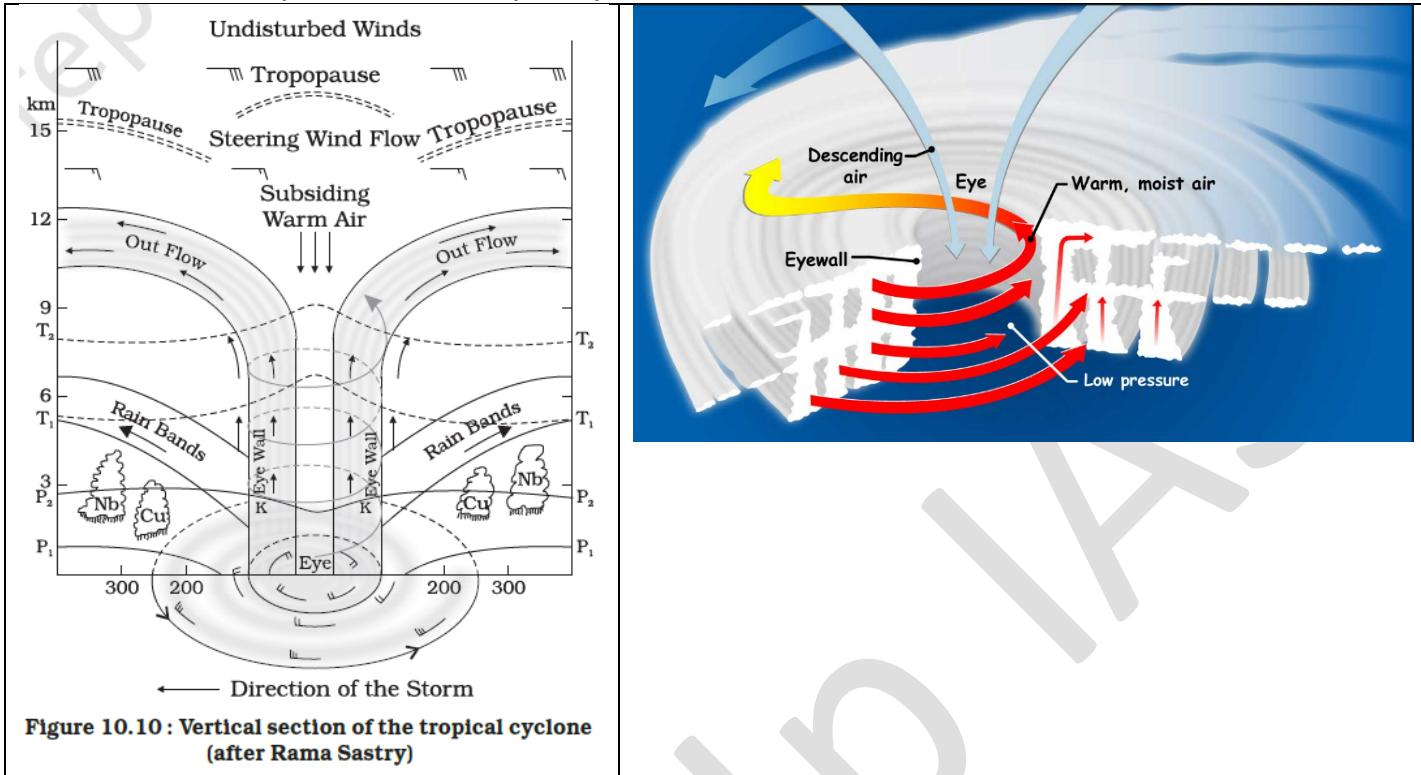
3) GEOGRAPHY: CYCLONES

- **Syllabus:** Important Geophysical phenomena such as earthquakes, Tsunami, Volcanic activity, **cyclone** etc., geographical features and their location - changes in critical geographical features (including waterbodies and icecaps) and in flora and fauna and the effects of such changes
- **Why in news?**
 - **Cyclone Biparjoy** (June 2023)
- **Example Questions**
 - Tropical Cyclones are largely confined to South China Sea, Bay of Bengal and Gulf of Mexico. Why? [12.5 marks, 200 words] [Mains 2014]
 - The recent Cyclone on the coast of India was called "Phailin". How are the tropical cyclones named across the world? [Mains 2013] [10 marks, 150 words]
 - Why is east coast of India more prone to tropical cyclones compared to west coast of India? [10 marks, 150 words]
 - Discuss the conditions required for the formation of a tropical cyclone [10 marks, 150 words]
- **Introduction**
 - Tropical cyclone is a violent storm system characterized by a low pressure centre, strong winds and heavy rainfall. They originate over oceans in tropical areas and move to coastal areas bringing about large scale destruction. It is one of the most devastating natural calamities.

Prelims	Different names
	<ul style="list-style-type: none"> ▪ Cyclones - Indian Ocean region ▪ Hurricane - Atlantic / East pacific ▪ Typhoons - West Pacific and South China Sea

- **How does a cyclone originate and intensify?**
 - Tropical cyclones originate over warm tropical oceans.
 - **The condition favorable for the formation and intensification of tropical storms are**
 - a. Large Sea surface with temperature higher than 26.5 degree celsius to a depth of atleast 50 meters below the surface.
 - b. Presence of the Coriolis force (A distance of atleast 500 km from equator) (as Coriolis force is zero at equator)
 - c. Small variation in the vertical wind speed (low wind shear i.e. there is not too much change in wind direction and strength at different levels)
 - d. Pre-existing weak low-pressure area or low-level cyclonic circulation
 - e. Upper divergence above the sea level system
 - f. If ITCZ is away from Equator, the tropical cyclone are intensified because of warm air masses converging at ITCZ.
- **Process of formation of a tropical cyclone**
 - Warmer ocean surface (generally late summers) -> Low pressure center on water bodies -> winds from surrounding region are attracted towards this region -> while rising up they release the latent heat which acts as an energy for tropical cyclone.
- **Process of intensification of storm**
 - The energy that intensifies the storm, comes from the condensation process in the towering cumulonimbus clouds, surrounding the center of the storm. With the continuous supply of moisture from the sea, the storm is further strengthened.
- **Various stages in formation of a tropical cyclone**
 - **Tropical Depression** (wind speed < 62km/h) -> **Tropical Storm** (wind speed > 62 km/h) -> **Cyclone** (Wind speed >= 119 km/h) -> **Super Cyclone** (wind speed >= 320 km/h)
- **Tropical Cyclone Structure**
 - Because the converging wind spiral inward towards the central low pressure area, the wind rotate in a counterclockwise direction around the central low in the northern hemisphere (clockwise in the southern hemisphere). As these winds spiral inward they draw in the thunderclouds around the storm, creating the spiral rain bands that are clearly visible on satellite images of the storm.
 - As the winds converge toward the central core, they spiral upwards, sending warm moist air upwards. As this air rises, it cools and releases its latent heat into the atmosphere to add further energy to the storm.
 - The winds spiraling around this central core create the eye of the tropical cyclone and eventually spread out at high altitudes. Eventually, cool air above the eye begins to sink into the central core. This dry descending air within the eye gives the core a clear, cloud free sky, with little to no wind. The wind is coming inwards towards the center from all direction. This convergence causes the air to sink in the eye. This sinking creates a warmer environment and the clouds evaporate leaving a clear area in the centre.
- **Dissipation**
 - Since the main source of energy for the storm is the heat contained in the warm tropical and subtropical oceans, if the storm moves over the land, it is cut off from its source of heat and will rapidly dissipate.
- **Other terms**
 - **Land fall:** It refers to the centre of a storm - or its eye - moving over land from the sea.

- A Schematic representation of tropical Cyclone



- Useful Video:

- <https://youtu.be/UKL9NIxLIIE> (Formation of a Tropical Cyclone)

A) WHY TROPICAL CYCLONES DON'T ORIGINATE ON WESTERN COAST OF S AMERICA, AFRICA AND AUSTRALIA

- Cold Ocean Currents -> don't let shifting of ITCZ -> warm air don't converge here.

B) HOW ARE CYCLONES ORIGINATING IN INDIAN OCEAN NAMED?

- The system of naming of Atlantic cyclones (hurricanes), is a fairly old practice, but giving names to cyclones that originate in the northern Indian Ocean and affect South Asian countries began only at the turn of this century.
- Currently, the Cyclones worldwide are named by 9 regions - North Atlantic, Eastern North Pacific, Central North Pacific, Western North Pacific, North Indian Ocean, South West Indian Ocean, Australian, South Pacific, and South Atlantic.
- The system of naming cyclones was finalized at a meeting of World Meteorological Organization (WMO) and the United Nation Economic and Social Commission for Asia and the Pacific (ESCAP) in 2000, and the first cyclone was named in 2004.

- Eight north Indian ocean countries, namely Thailand, Myanmar, Bangladesh, India, SriLanka, Pakistan, Maldives, and Oman were asked to contribute names so that a combined list could be compiled. Each country gave 8 names and a combined list of 64 names were prepared by the Regional Tropical Cyclone Committee.
 - One name from each country is picked in an order to name the cyclones.
 - The Cyclones in North Indian Ocean basin are named by Indian Meteorological Department and the first tropical cyclone was named in 2004 as Onil (given by Bangladesh).
 - This list exhausted with Cyclone Amphan in 2020.

The latest list of tropical cyclone names was adopted by the WMO/ United Nations Economic and Social Commission for Asia and the Pacific (WMO/ESCAP) panel countries in April 2020 for naming of tropical cyclones over north-Indian ocean, including Bay of Bengal and Arabian Sea.

- The 13 panel countries - Thailand, Myanmar, Bangladesh, India, Sri Lanka, Maldives, Pakistan, Iran, Yemen, Oman, UAE, Qatar and Saudi Arabia - have submitted a list of 13 names each [total 169]
- Why Name a Cyclone: Ease of Communication
 - Remembering cyclones or discussing their impacts, or warning people about them, becomes easier with a name.
 - Giving a name to a cyclone makes it easier to spread the word.

C) CYCLONE COLOR CODING

- IMD has its own color-coding system for warning and information regarding cyclones. It is used to signify the intensity of the situation and the warning associated with it. The main objective of the color coded system is to alert people of hazardous weather conditions which have potential to damage properties and lives.
 - Green: All is well - no adverse weather conditions
 - Yellow: It asks the 'guards to be updated' to handle the bad weather that can last for days, with a warning of affecting daily activities.
 - Orange: "Be Prepared" - It can be warning for extreme damage to communication disruptions that can lead to power cuts, road and railway blockade.
 - Red: It is the highest level of warming that notifies the authorities to take action. This is a case in which there is a threat to life with the worst weather conditions.

D) CYCLONE BIPARJOY (JUNE 2023)

- Some unique aspects about Biparjoy:
 - It was a slow cyclone. It developed into a cyclonic storm on 6th June 2023 and made a landfall on June 15. The 10 day life period, during which it developed into a very severe cyclonic storm and then an extremely severe cyclonic storm, was longer than the average but not the longest. One of the reasons for its longer stay on the sea was its relatively slow speed.
 - Cyclones in the Arabian Sea typically progress with a speed of 12-14 km per hour. Biparjoy, through most of its life, moved at a speed of 5-7 km an hour while covering a distance of nearly 1200 km to Gujarat.
 - Reason: Biparjoy was sandwiched between two anti-cyclonic systems. One of them had the effect of aiding its northwards movement, while the other was sort of pulling it back. The combined effect was that it moved relatively slow.

- **Impact:** The slow speed meant that even after reaching land, the cyclone remained close enough to the sea to draw moisture and sustain itself. This allowed it to penetrate much deeper in land (till Ajmer, Rajasthan)
- It was a **recurring tracks cyclone**.
 - The influence of these anticyclonic systems also made its trajectory wobble. We call it recurring tracks cyclone. The trajectory of such cyclones tends to change directions frequently.
 - Therefore, it was only from 11th June, it was concluded that cyclone is hitting Gujarat coast (earlier it was presumed to be hitting Karachi)

E) EXCELLENT WORK OF DISASTER MANAGEMENT:

- **Excellent Forecasting:** Management of recent Cyclone Biparjoy indicates that India has successfully planned and executed integrated forecast systems and computational infrastructure to reduce cyclone mortality by nearly 90% (when compared to the first decade of 21st century).
 - **Early warning** (4 days in advance before landfall) gave enough time for administration to prepare.
 - **Note:** A cyclone in 1998, that stuck Gujarat, reportedly killed nearly, 3,000 people, and it can be safely said that India has moved beyond that era.

F) WHY ARE TROPICAL CYCLONES BECOMING MORE DANGEROUS?

- **Climate Change -> Marine Heatwaves**
 - Ocean absorbs most of the access heat in the atmosphere, it is leading to oceans warming up globally causing marine heatwaves.
- **Warming of oceans** is leading to other challenges like increased intensity of cyclones, rising sea levels, and changing weather patterns globally.
 - For e.g., a new study has suggested that warm subsurface waters in the Bay of Bengal has likely helped fuel the 2020 Amphan super cyclone.

G) WAY FORWARD:

- With climate change, **be prepared for stronger cyclones**.
- **Coastal Regulation Zone Rules** should be followed in letter and spirit.
 - Further, it should also specify that only those structures, which are capable of withstanding these cyclones are built in these regions.
- The **dwelling of rural, coastal inhabitants must be strengthened**.
- **Increase green cover** like Mangroves which act as natural shield and improve resilience of coastal areas.
- **Forecasting should continue to improve**.
 - There should also be focus on maximizing skills of the forecasts of cyclone intensities, lifespans, speeds, and tracks.
 - **India's academic climate community** should build teams to work with IMD to advance understanding of cyclone processes and to improve cyclone predictions.

1) SOCIAL JUSTICE: LGBTQIA+

- **Example Questions**
 - "Legal provisions alone will not be able ensure equal rights for Transgenders, social attitude towards them needs to change" Discuss [15 marks, 250 words]
- **Introduction**
 - **LGBTQIA++** is an inclusive term that includes people of all genders and sexualities, such as lesbian, gay, bisexual, transgender, questioning, queer, intersex, asexual, pansexual, and allies.
 - **LGB** (Lesbian, Gay, Bisexual)
 - **Who are Transgenders?**
 - People who have a gender identity or expression that differs/doesn't conform to the social expectations for their assigned sex. They are sometimes called transsexual if they desire medical assistance to transition from one sex to another.
 - Transgenders also include people who are not exclusively masculine or feminine (people who are genderqueer/non-binary).
 - **Intersex** - Individuals who don't fit into specific gender norms of woman or man; can also be used for those with reproductive anatomy that isn't biologically typical.
 - **Questioning** - when a person is exploring their sexuality, gender identity and gender expression
 - **Queer** - An inclusive term or as a unique celebration of not molding to social norms
 - **Asexual** - used for those who don't feel sexual attraction to either sex or that don't feel romantic attraction in the typical way.
- **Population:** Estimated transgender population > 4,90,000 (2011 census)
 - But the transgender activists estimate the population to be 5-6 times more.
 - In the United States 0.3% people identify themselves as transgender indicating that our census numbers are big under-estimation.
 - It further shows that people in India still have to hide their identity as transgender.
 - **Nodal Ministry :** Ministry of Social Justice and Empowerment.
- **Problems faced by Transgenders:**
 - Discrimination in Family
 - Family gives up the child; higher rate of domestic violence; Orthodox mindset considers birth of transsexual as ill omen.
 - social stigma.
 - discrimination in all walks of life (Education, Health, Work, Access to Public Facilities; Denial of residence);
 - lack of self-determination (mis categorization as males or females);
 - police harassment.
 - insensitive laws (provisions for transgenders missing);
 - For e.g.
 - personal marriage laws don't legalize homosexual marriages.
 - Laws related to adoptions (The Hindu Adoption and Maintenance Act, 1956 (HAMA), and Juvenile Justice Act (JJA) - both laws - don't mention anything about adoption by homosexual couples.

- sexual harassment;
 - Lack of understanding in society -> makes them feel isolated, lonely and may cause mental health issues.
- **Important steps taken for their welfare so far**
 - i. **Supreme Court Judgment in 2014: National Legal Service Authority vs. Union of India**
 - Declared Transgender people to be a 'third gender'.
 - Affirmed that fundamental rights granted under Constitution of India will be equally applicable to transgender people
 - Gave them right to self-identification of their gender as male, female or third gender.
 - The court also recognized transgender people as **socially and economically backward classes** and hence should be granted reservation in educational institutions and jobs.
 - i. **Steps taken by various state governments**
 - Some states like Bihar have already provided them reservations as OBCs.
 - The state of Kerala had become the first state to announce the policy for transgenders in 2015. It has recently announced reservation in Higher educational institutions for transgenders.
 - States like **TN, Rajasthan, and Chhattisgarh** have also allowed hiring of transgenders in police forces.
 - iii. **Transgender Persons (Protection of Rights) Act, 2019**
 - iv. **Transgenders Persons (Protection of Rights) Rules, 2020**
 - v. **National Council for Transgender Persons constituted (Aug 2020)**
 - vi. **National Medical Commission declared conversion therapy a 'professional misconduct'** and empowered the State Medical Councils to take disciplinary action if the guideline is breached.
 - Earlier, Madras High Court had directed NMC to issue an official notification listing conversion therapy as a wrong, under the Indian Medical Council (Professional Conduct, Etiquettes and Ethics).
 - vii. **Shelter Homes - 'Garima Greha' (July 2021)**
 - Shelter Homes - 'Garima Greha' for Transgenders: MoSJ&E has initiated 12 pilot shelter homes and provided financial assistance to community based organizations (CBOs) for setting up of shelter homes 'Garima Greha' for Transgender Persons. (July 2021)
 - These pilot shelter homes are in States of Maharashtra, Delhi, West Bengal, Rajasthan, Bihar, Chhattisgarh, Tamil Nadu and Odisha.
 - The main aim of these shelter homes is to provide safe and secure shelter to Transgender persons in need. These shelter homes would provide basic amenities like food, medical care, recreational facilities and also conduct capacity-building/skill development programmes for Transgender persons.
 - viii. **National Portal for Transgender Persons**
 - The portal provides for the **procedure for identification certificates issued by the District Magistrate**. It is functional in all districts of the country.
 - The portal was launched in Nov 2020.
 - As of June 2021, i.e. within 6 months of its launch, the portal has issued 1,557 certificates.
 - x. **IWEI - India Workplace Equality Index (Dec 2020)**
 - It is touted as the country's first comprehensive benchmarking tool for employers to measure their progress on LGBT+ inclusion at the workplace.

- It was launched in Dec 2020 by **non-profit Keshav Suri Foundation** (founder Hotelier-activist Keshav Suri) partnered with **Pride Circle, Stonewall UK** and **FICCI**, to bring the IWEI to India Inc.
 - The index **measures 9 areas**: policies and benefits, employee lifecycle, employee network group, allies and role models, senior leadership, monitoring, procurement, community engagement and additional work.
 - **Standard Chartered Bank** has been named as a 'Gold Employer' in the Indian Workplace Equality Index 2021 for its LGBT+ inclusion.
- **Steps that further needs to be taken**
 - i. **Proper estimation**
 - ii. **Sensitization and Awareness to deal with stigmatization**
 - Inclusion of third gender in school books
 - Information, Education and Communication Programs
 - iii. **Ending all forms of discrimination, coming up with welfare schemes etc.**
 - Effectively enforce the 2019 act
 - iv. **Reservation in educational institutions and jobs**
 - This will help in dealing with poor literacy rate and employment situation
 - v. **Special focus on their health needs**
 - Community had been demanding mental health counselling support and free gender transition surgery facilities in government hospitals.
 - vi. **Rehabilitation**
 - A large number of them are involved in flesh trade. There should be a plan to rehabilitate them in various other sectors
 - vii. **Transgender Welfare board in all states** should be made mandatory.
 - This will provide an institutional set up to look after the welfare of the transgender community.
 - viii. **Reforming Personal Laws** to make them more inclusive.

2) THE TRANSGENDER PERSONS (PROTECTION OF RIGHTS) ACT, 2019

- **Main Provisions**
 - i. **Definition of Transgenders:**
 - A person whose gender doesn't match the gender assigned at birth. It includes trans-men and trans-women, persons with inter-sex variations, gender queers, and persons with social cultural identities such as Kinnar and Hijra.
 - **Intersex variations** is defined to mean a person who at birth shows variations in his or her primary sexual characteristics, external genitalia, chromosomes, or hormones from the normative standard of male or female body.
 - ii. **Prohibition Against Discrimination:** The act prohibits the discrimination against a transgender person, including denial of services or unfair treatment in relation to, Education, Health, Employment, access to or enjoyment of goods, facilities, opportunities available to public; Right to movement Right to reside, rent, own or otherwise occupy property, Opportunity to hold public or private office;
 - iii. Every transgender person shall have **right to reside** and be included in the household.
 - If the immediate family is unable to care for transgender persons, the person may be placed in a rehabilitation centre, on the orders of a competent court.

- iv. **Health Care:**
 - The government must take steps to provide health facilities to transgender person including separate HIV surveillance center, sex reassignment surgeries, etc.
 - The government shall review medical curriculum to address health issues of transgender persons, and provide comprehensive medical insurance scheme for them.
- v. **Certificate of identity:** A transgender person may make an application to the District Magistrate for a certificate of identity, indicating the **gender as 'transgender'**. A revised certificate may be obtained only if individual undergoes surgery to change their gender either to male or a female.
- vi. **Welfare measures by government**
 - The act directs central and state governments to take measures to ensure the full participation of transgender persons in society.
 - Government must also take steps for their rescue and rehabilitation, vocational training and self-employment, create schemes which are transgender sensitive, and promote participation in cultural activities.
- vii. **Offences and penalties:** -> Forced labour; denial of public space; removal from household, village; physical, sexual, verbal abuse etc.; These offences will attract imprisonment between six months and two years, and a fine.
- viii. **National Council for Transgenders persons (NCT)**
 - The National Council of Transgender persons will consist of
 1. Union Minister for Social Justice (Chairperson)
 2. Minister of State for Social Justice (Vice-Chairperson)
 3. Secretary of Ministry of Social Justice
 4. One representative from ministries including health, home affairs and human resource development
 5. Representatives from other ministries, NITI Aayog and the NHRC.
 6. Five members from transgender community and five experts from NGOs.
 - The council will advise the central government on the formulation and monitoring or policies, legislation and projects with respect to trans gender person.

- Analysis

- **Positives**
 - The act is in spirit with International Conventions, particularly the Universal Declaration of Human Rights, 1948, the International Covenant on Civil and Political Rights, 1966, and the Yogyakarta Principles 2006.
 - It recognizes gender identity as non-binary. Through this act the government has evolved a mechanism for social, economic and educational empowerment of the transgenders.
 - The act will benefit a large number of transgenders persons, mitigate the stigma, discrimination and abuse against this marginalized section and bring them into mainstream of society.
 - It will lead to greater inclusiveness and would make transgender persons as productive member of society.
 - The bill will bring greater accountability on the part of the central government and state government/ union territories administrators for issues concerning transgender persons.
- **Negatives/Limitations/Shortcomings**
 - i. **Principle of Self Determination/ Self Identification missing**
 - NALSA verdict had suggested that anyone who didn't identify with the gender assigned to them by birth could choose to identify as transgender without needing a physical

- examination and certification, the new bill undoes this possibility both in spirit and in practice.
- In fact, the parliamentary standing committee on the bill, which submitted its report in July 2017 have called for many modifications including the change in definition to ensure conformity with the international definition and providing right to self-identification.
 - In the current act, there are no avenues open either for appeal in the event a magistrate refuses to hand out such a certificate.
- ii. **Doesn't suggest changes in other laws**
 - Certain criminal and personal laws currently only recognize the genders of 'man' and 'women'. It has not been defined how such laws will be applicable to transgender persons.
 - iii. **National or State Commissions: No provision** for national or state commission for transgenders
 - NCT, lack the power of commission, which is statutory in nature
 - iv. **Transgender Rights Court: No provision for transgender right courts**
 - v. **Reservation: Silent on any kind of reservation** for transgender persons in education system
 - vi. **Lack of clear grievance redressal mechanism and insufficient punishment**
 - The act is ambiguous about the methods individuals must follow to seek justice, limits the jail sentences that the offender may receive to just two years.
 - vii. **Only covers transgender** (protection may be needed by Intersex, Queer, lesbians, gays, bisexuals etc. as well)
- **Parliamentary standing committee on the bill submitted its report in July 2017 and suggested following changes.**
 - a. Self-identification to bring conformity to international definition
 - b. Providing transgender persons with medical benefits
 - c. Providing quotas in government college and jobs
 - d. Recognize the rights of transgenders person to partnerships and marriages
 - **This has become more crucial after decriminalization of homosexuality by Supreme Court.**
 - **Conclusion1**
 - With various judicial and legal efforts, NALSA Judgment, Transgender Persons (Protection of Rights) Act, 2019 etc., the environment for transgender persons is changing in the country. But, still we need to go a long way in creating a society completely inclusive of LGBTI++ community.
 - **Conclusion2**
 - We need to emulate Kerala Model throughout the country. This state, in last 12 years have turned from a society which was very discriminatory against transgenders to a society which is very inclusive towards transgenders. All this is a result of strong political will where politicians and administrators have acted to reform social attitudes.

3) PRELIMS: INTERSEX INCLUSIVE PROGRESS PRIDE FLAG

- Why in news?

The month of June is recognized as the Pride Month all across the world. While many organization still use the older rainbow pride flag (a simple red to violet rainbow) in their events, the new variation is increasingly accepted as a more inclusive representation of the LGBTQIA+ community (June 2023)

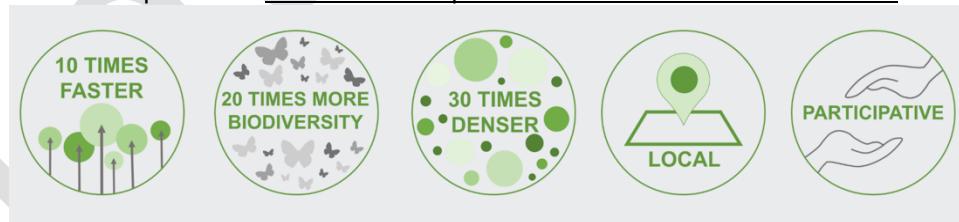


- A Pride flag essentially represents the pride associated with LGBTQIA+ social movement. For centuries people belonging to the community have had to fight for basic rights in countries across the world. The struggle continues in many countries. Uganda, for instance, recently passed a law criminalizing the LGBTQIA+ community.
- History of Pride Flag:
 - The simple rainbow pride flag, designed by Baker, made its debut in 1978 at the San Francisco Gay Freedom Parade. The new flag is based on this very flag.
 - In 2018, American Graphic Designer Daniel Quasar redesigned the flag to include the colors of the transgender flag, blue, light pink, and white. Quasar added the transgender colors along with black and brown color (representing the people in color) in a chevron shape to represent forward movement.
 - The most recent version of the flag is designed by Valentino Vecchietti in 2021 as an inter-sex inclusive Pride flag. A purple circle over a yellow triangle was included in the chevron part of the pride flag. This is a reference to the Intersex pride flag.
 - Why is it called inter-sex inclusive Progress Pride Flag:
 - The intersex has been largely been under-represented within broader queer narratives.
 - According to UN, intersex people are born with sex characteristics (including genitals, gonads, and chromosome pattern) that don't fit typical binary notions of the male or female bodies.
 - In 2021, Intersex Equality Rights (UK) decided to adapt the Pride Progress flag design to incorporate intersex flag, creating the new inter-sex pride flag. Intersex equality rights activists did the redesigning. The colors yellow and purple are used in the intersex flag as a counterpoint to blue and pink which are traditionally seen as gendered colors.

- What do colors of the new flag signify?
 - Red - Life
 - Orange - Healing
 - Yellow - New Ideas
 - Green - Prosperity
 - Blue - Serenity
 - Violet - Spirit
 - Chevron Part:
 - Black and Brown = People of color
 - White, blue and pink = Trans people
 - Yellow with purple circle = Intersex People

1) ENVIRONMENT: MIYAWAKI FORESTS

- **Why in news?**
 - PM Modi talks Miyawaki forests in Mann ki Baat (June 2023: Source - IE)
- **Practice Questions:**
 - Discuss the Miyawaki method of afforestation and its significance in the context of ecological restoration and climate mitigation [10 marks, 150 words]
 - Critically analyze the advantages and limitations of the Miyawaki method compared to traditional afforestation approach. Discuss its potential application and suitability in different regions of India. [15 marks, 250 words]
- **What is Miyawaki Forest?**
 - Miyawaki Forests (also known as Miyawaki method or Miyawaki technique), refer to a unique approach to afforestation and ecological restoration developed by Japanese Botanist Dr Akira Miyawaki. He is a recipient of the 2006 Blue Planet Prize, which is the equivalent of a Nobel prize in ecology.
 - This method aims to create dense, fast growing forests in a short period of time, typically 20-30 years, by emulating the natural growth process of the forests.
- **Details of the method and its advantages:**
 - The method take its inspiration directly from process and diversity in nature: 15 to 30 different species of trees and shrubs are planted together. This plant community works very well together, and is perfectly adapted to local weather conditions.
 - The habitat thus created get more complex over time and attract much more biodiversity. Vegetation becomes much denser than conventional plantations, and it has the structure of a mature natural forest.
 - For e.g. a Kerala based teacher, Raafi Ramnath, has used this method to transform a barren land into a mini forest called Vidyavanam by planting more than a 100 varieties of trees.
 - It is a multistorey structure, where different levels of vegetation appear. The forest thus structured delivers many benefits in the form of ecosystem services.
 - **Faster Recovery:** It would take 200 years to let a forest recover on its own. But with the Miyawaki method a similar result is achieved in 20 years.
 - The technique works worldwide irrespective of soil and climatic conditions.



- **Some challenges and limitations**
 - **Regular Maintenance** requirement: Regular watering, weeding, and pest control can be labor intensive and time consuming
 - **Seed availability** for various kinds of diverse seed is a challenge.
 - **High Initial investment** - Cost of acquiring and preparing land, procuring diverse range of seeds/saplings, and ongoing maintenance expense.
 - **Lack of Long term Data**: Since Miyawaki method is only a few decades old, how sustainable these trees would be over longer period is not very well known.

- **Conclusion:**

- It is important to consider these advantages and limitations when assessing the suitability and feasibility of the Miyawaki method in different contexts. The specific ecological, social, and economic factors of an area should be taken into account for successful implementation and effective decision-making

4. PRELIMS FACTS

1) PLACES IN NEWS: LAKE VICTORIA

- Why in news?

- More robust measures needed to minimize disaster impact in Lake Victoria Basin: Study (June 2023: Source - DTE)

It is the 2nd largest fresh water lake in the world in terms of surface area (after Lake Superior).

It has its boundaries in 3 east African countries (Uganda(45%), Kenya (6%) and Tanzania (49%)). It occupies a shallow depression in Africa.

It is largest lake of Africa.

Source of water for lake Victoria: Mostly rainfall (80%) and thousands of small streams. The Kagera river is the largest river flowing into the lake, with a mouth on lake's western shore.

Lake Victoria is drained solely by the Nile River near Jinja, Uganda, on the lake's northern shore

Mingingo Island

It is a very small island (barely 1/4th of an hectare large) in Lake Victoria.

It is claimed by both Uganda and Kenya and the dispute has continued for a decade now.

The island is a rounded, rocky outcrop which has become densely populated over the last 1 decade.

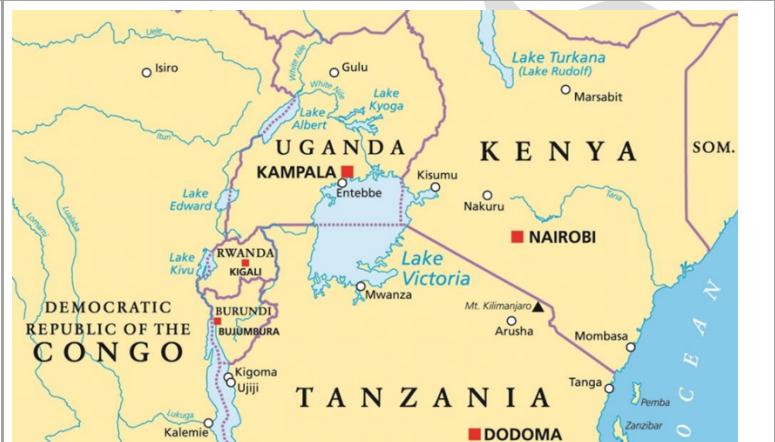
The surroundings of the island is very rich in fishes and is a fisherman's paradise.

Climate Change threatening Lake Victoria Basin (June 2023)

- A new scientific report published in the journal Nature shows significant precipitation changes and increasing extreme climate events in the near future of the already sensitive region, affecting both its large human populations as well as endemic biodiversity.

Note: Country's forming part of Lake Victoria Basin:

1. Uganda
2. Kenya



Note:

Lake Superior is the world's largest fresh water lake by surface area, third largest by volume, and the deepest, largest and coldest of the Great Lakes of North America.

Lake Baikal (located in Russia in the southern region of Siberia), is the largest freshwater lake by both volume and depth (1741 m). It contains 20% of the world's fresh water. It hides its vast waters under a relatively small surface area.

3. Tanzania
4. Rwanda
5. Burundi

Each of this country contributes water to the lake through various rivers, streams, and direct rainfall.

2) PLACES: VENETIAN GRAND CANAL

Venice: It is a city in north-eastern Italy and is the capital of Veneto region. It is built of 118 small islands. That are separated by expanses of open water and by canals.

Venetian Grand Canal:

It is a channel in Venice, Italy. It forms one of the major water traffic corridors in the city.

One end of the canal leads into lagoon near the Santa Lucia Railway Station and the other end leads into the basin at **San Marco**; in between, it makes a large reverse-S shape through the central districts of Venice.

Why in news?

Venetian canal had turned green. Initially known one was able to give a reason. But in June 2023, authorities found that the test samples of the water confirmed the canal's bright new hue was caused by **fluorescein**, a chemical often used to find leaks during underwater construction. The official are investigating how the chemical got into the canal.



3) CULTURE: GANDHI PEACE PRIZE, 2021

- Gandhi peace price is an annual award instituted by Gol in 1995, on the occasion of 125th Birth Anniversary of Mahatma Gandhi as a tribute to the ideals espoused by Mahatma Gandhi.
- **Who can get this award?**
 - This award is open to all persons, irrespective of nationality, race, language, caste, creed, or gender.
 - The award carries an amount of Rs 1 crore, a citation, a plaque, and an exquisite traditional handicraft/handloom item.
- **Past Awardees** include ISRO, RK Mission, Grameen Bank of Bangladesh, Vivekananda Kendra, Akshay Patra, Sulabh International.
 - It has also been awarded to luminaries like Nelson Mandela, Dr Julius Nyerere (Former President of Tanzania) etc.
 - **Recent awardees** include Sultan Qaboos Bin Said Al Said, Oman (2019) and Bangabandhu Sheikh Mujibur Rehman (2020), Bangladesh.

- The Jury headed by the PM Modi, after due deliberation on 18th June 2023 unanimously decided to select **Gita Press**, Gorakhpur as the recipient of the Gandhi Peace Prize for the year 2021, in recognition of its outstanding contribution towards social, economic, and political transformation through non-violent and other Gandhian methods.
- **More About Geeta Press:**
 - Established in 1923, it is one of the world's largest publishers, having published 41.7 crore books in 14 languages, including 16.21 crore Shrimad Bhagvad Gita. The institution has never relied on advertisement in its publications, for revenue generations.

4) SCIENCE: COCAINE

- **Why in news?**
 - "Black Cocaine" worth Rs 32 crores seized at Ahmedabad International Airport (June 2023: Source - PIB)
- **About Cocaine:**
 - It is powerfully **addictive stimulant drug** made from the leaves of the coca plant native to South America. Although healthcare providers may use it for valid medical purpose, such as local anesthesia for some surgeries, recreational cocaine is illegal.
 - As a **street drug**, it looks like a fine, white, crystal powder.
 - **How does cocaine affect the brain?**
 - It increases levels of the natural chemical messenger dopamine in brain circuits related to the control of movement and reward.
 - **Short term effects:**
 - Extreme happiness/ mental alertness/ hypersensitivity to sight, sound, and touch/ Irritability/ Paranoia - extreme and unreasonable distrust of others.
- **About Black Cocaine:**
 - It is a designer drug wherein cocaine is mixed with charcoal and other chemicals to give it black rubbery appearance to camouflage and to evade detection by Canines and field testing kit. This modus operandi to smuggle cocaine is unique and this is the first instance of seizure of "Black Cocaine" by Directorate of Revenue Intelligence (DRI)

5) SCIENCE: SPACE AND ASTRONOMY: STAR BETELGEUSE

- It is one of the brightest and largest known stars in the Milky Way Galaxy. It is located 700 light years away from Earth. It is part of the Orion constellation and is visible to the naked eye in the night sky.
- **Some Key features:**
 - It is a **Red Supergiant** – Thus it is in the last stage in the life cycle of star.
 - **Very Large:** If placed at the center of our solar system, it would extend out to asteroid belt.
 - **Future Supernova:** It is expected to explode as a supernova within the next 100,000 years – a blink of an eye on a cosmic time scale. This explosion will be a spectacular event, potentially visible from Earth even during the day, and the star will outshine the entire galaxy for weeks of months.
- In late 2019, astronomers around the world grew giddy with excitement, because they saw the **Betelgeuse star get fainter than ever before**. There was some speculation that this might be death rattle before the end.

- It was understood that in 2019, Betelgeuse likely underwent an enormous surface mass ejection (SME). An SME happens when a star expels large amount of plasma and magnetic flux into the surrounding space. It is suspected that Betelgeuse lost a large part of its surface material.
- What is remarkable is that Betelgeuse ejected 400 billion times more mass than a typical event on other stars. This is multiple times the mass of Moon, pushed out at incredible speed.

Understanding lifecycle of a star:

- 1) Small or Medium Star (mass less than 8 times the mass of sun):
 - Star -> Red Giant -> White Dwarf (with planetary supernova) -> Black Dwarf
- 2) **Large Stars** (mass more than 8 times the mass of sun)
 - Star -> dying stage (iron core) -> supernova explosion -> Neutron Star -> Black Hole (not all neutron stars will become black hole)

6) ANTHROPOLOGY: DID HOMO NALEDI MADE ROCK ART AND BURIED THEIR DEAD?

A) EVOLUTION OF HUMANS

- The earliest known hominids (man-like species) were members of the ***Australopithecus genus***. They lived roughly between 4.4 and 1.8 MYA and perhaps lived only in Africa (remains have not been found anywhere else so far).
 - ***Ardipithecus*** (or *Australopithecus ramidus*) is the earliest sample of this genus and seems to have evolved from some common ancestor of the hominid and pongid apelines in sub-Saharan Africa about 4.4 MYA.
 - So far, we don't have any evidence to show if *Australopithecus* made any tools. They may have used naturally available material as tools.
- **About Homo Genus:** This is the genus to which humans belong. Like modern humans, other species in the group had large brains and used tools.
- **Homo Habilis:**
 - The earliest known (from fossil evidence so far) representative of '***Homo***' genus is ***Homo habilis*** (hand using man) who was found in Kenya and Tanzania about **2.8 MYA**.
 - The **earliest stone** tool have been found at **Hadar in Ethiopia** and have been dated about 2.5 MYA.
 - These tools were used to scrape flesh from carcasses of animals killed by carnivores, and crack open long bones for their marrow content.
 - These 'first humans', thus became scavengers on animal left-overs. The most probably exploited a time window around mid-day when the carnivores were resting (hyenas arrived nocturnally to devour the leftovers). Walking upright freed their arms to carry bones away to be processed in safe sites to augment the plant-based dietary staples.
 - **Losing of body hairs:** To facilitate mid-day movements -> fur-covered animals will soon overheat.
- **Homo Erectus** (fully erect posture) appeared in east Africa around 1.7 MYA. From here, the species spread to various parts of Africa, Asia and Europe.
 - They are the earliest known humans to have possessed modern human like body proportion with relatively elongated legs and shorter arms.
 - These early humans were efficient hunters.
 - A division of labor came about. Men Hunted; women gathered plants.

- **Homo Neanderthalis** (lived between 400,000 - 40,000 years ago) in Europe and Southwestern to Central Asia.
 - The Neanderthals, *Homo neanderthalensis* or *Homo Sapiens Neanderthalensis*, is an extinct species or subspecies of archaic humans that lived until about 40,000 years ago.
 - They are known from many fossils. The species was first located in 1856 in the Neander Valley of the present day Germany, identified from fossils which were 1,30,00 years old.
 - Whether Neanderthals got merged into *Homo Sapiens* or whether they became extinct remains a mystery. They are the closest extinct human relatives
- **Homo Denisovans:**
 - The **Denisovans** shared a common ancestor with Neanderthals until their population diverged 380,000 to 470,000 years ago. This was much later than the split between modern humans and Neanderthals/Denisovans, which occurred between 5,50,000 and 7,60,000 years ago.
 - ‘**Hominin Denisova**’ was discovered by Swedish Paleo geneticist Svante Paabo, the winner of 2022 Nobel Prize in Medicine.
 - In 2012, Paabo and his team sequenced the DNA of a well-preserved fragment of the bone that was 40,000 years old and found in 2008 in the Denisova Cave in southern Siberia. The result was astounding they had come across an entirely novel hominin, distinct from Neanderthals and even more from modern humans.
 - In the same cave, palaeontologists later discovered the fossil of a girl who was part Neanderthal and part Denisovan, proving that these two species interbred.
 - Little is known about what the Denisovans looked like because they have left few fossilized traces of their time on Earth other than fragments found in Siberia and a jawbone discovered on the Tibetan Plateau in 2019.
- **Homo Sapiens** appeared for the first time around 5,00,000 years ago.
 - From around 130,000 years ago, there is evidence of Homo Sapiens neanderthalis (Neanderthals) in various parts of western and central Asia and in Europe. Whether Neanderthals got merged into Homo Sapiens or whether they became extinct remains a mystery.
- **Anatomically modern humans**, known as *Homo sapiens*, seem to have appeared in Africa between 1,95,000 and 1,50,000 and eventually replaced all other Homo Sapiens.
- **Note:** Evolution is not a neat unilinear process. There are overlap and co-existence of species

B) HOMO NALEDI

Major new research claims smaller brained Homo naledi made rock art and buried the dead. But the evidence is lacking (June 2023: Source - TH)

- Homo Naledi were the short stature, small-brained, ancient cousins who are thought to have lived in Southern Africa between 335,000 and 241,000 years ago.
- They were first discovered in 2013 in South Africa's rising star cave system.
- Rising Star cave system is an exceptional resource for exploring the origins of our species.
- New studies claim that Homo Naledi intentionally buried their dead (a sophisticated practice we generally associate with homo sapiens) and made rock art, which suggests advanced cognitive abilities.
- But these findings have been challenged by several archaeologists

7) BIODIVERSITY: HIMALAYAN BROWN BEAR (URSUS ARCTOS ISABELLINUS)

- **Why in news?**
 - An Himalayan brown bear (*Ursus arctos isabellinus*) as captured by J&K Wildlife Department on May 13, 2023, at Rajwara in the North Kashmir district of Handwara, days after it was found wrecking graveyards, reportedly in search of human cadavers to eat (June 2023: Source - DTE)

It is the largest animal in Himalayas and is usually reddish brown in color. They inhabit altitudes ranging from 2,000 to 2,500 metres, predominantly above the tree line.

It also shows sexual dimorphism (Males (1.5 - 2.2m), Females (1.37 - 1.83m)).

Distribution: Nepal, Pakistan, and Northern India. In Hemis National Park, Great Himalayan National Park, Nanda Devi Park -> this may be seen as the giant mammal walking upright.

IUCN Status: CR

Please note that IUCN status of Brown bear is LC (due to its wide distribution). But the Himalayan subspecies is CR.

Updates:

Human encroachment in wildlife has led to bears straying more often into human-dominated areas. Several incidents from various villages of J&K such as Behnipora, Budshungi, and Shatiam have been reported, where more than one bear may have entered.

Key reasons: Insufficient food in their habitats;



8) BIODIVERSITY: ORCHIDS OF DARJEELING HILLS AND DOAB ARE FACING THREATS

- **What are orchids?**
 - They are a diverse and widespread group of flowering plants, with blooms that are often colorful and often fragrant commonly known as the **Orchid** family. They belong to the family **Orchidaceae**, which is one of the largest family of flowering plants with possibly over 27,000 species and more than 800 genera.
 - **Habitats:** Orchids can be found in nearly every habitat, but most orchid species are tropical.
- **The Botanical survey of India**, in 2019 came up with the first comprehensive census of orchids in India putting the total number of orchid species to 1256.
 - **Orchids can be classified** in three types:

- » **Epiphytic:** (Plants growing on another plants including those growing on rock boulders and often termed lithophyte).
- » **Terrestrial:** (Plants growing on land and climbers)
- » **Mycoheterotrophy:** (Plants that derive nutrients from mycorrhizal fungi that are attached to the roots of a vascular plants).
- » In India, of all orchids 757 are epiphytic, 447 are terrestrial, and 43 are mycoheterotrophy.
- **State wise distribution:**
 - » **Arunachal Pradesh** (612 species); Sikkim (560 species) and West Bengal (with Darjeeling Himalayas having high species concentration) with 479 species.

- Orchids of North Bengal are facing threats (June 2023)

- The wild orchids of Darjeeling Hills and Dooars are facing threats due to habitat loss (mostly due to deforestation).
- **The most endangered** are the epiphytic orchids - the type that grows on another plant/tree merely for physical support. Please note that they are not parasitic and use trees only for support.
- Orchids are also natural gauges of air quality because they don't grow in polluted air
- **Applications:**
- The Oraon and Kharia tribal communities use wild orchids to treat range of diseases - cut and fractures, skin diseases, aches and pains.



Some Important species of Orchids:

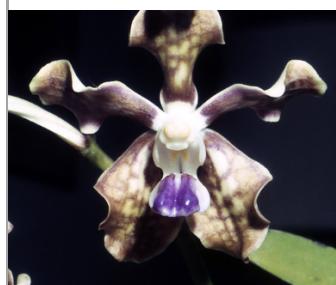
The Dendrobium aphyllum carries pinkish violet, fragrant flowers;



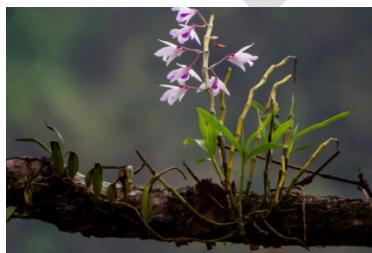
The Bulbophyllum leopardinum, with its pale green and spotted red flowers simulate a leopard's spots;



Vanda Tessellate is greenish with a striking blue purple lip



Dendrobium transparens



Aerides Maculosa - Foxrush Orchid



9) DEFENCE: INS KIRPAN

- **Why in news?**
 - India gifts missile Corvette INS Kirpan to Vietnam (June 2023)
- **Details:**
 - INS Kirpan is a Khukri class missile corvette displacing 1,350 tonnes and was commissioned into the navy on Jan 12, 1991.
 - The ship is fitted with a medium range gun, 30 mm close range guns, chaff launchers, and surface to surface missiles, enabling it to perform a wide variety of roles, including coastal and offshore patrol, coastal security, anti-piracy, HADR operations etc.
- **Gift to Vietnam**
 - India gifted indigenously built in service missile corvette INS Kirpan to Vietnam to enhance that country's Naval capabilities.